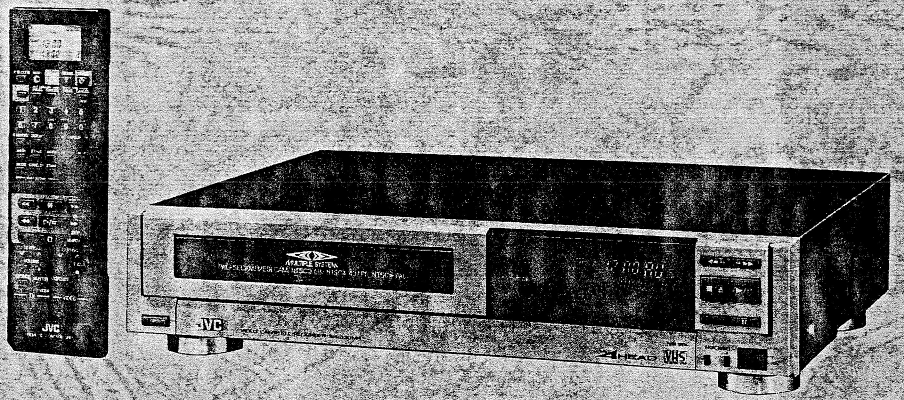
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

SR-330MS



SPECIFICATIONS

GENERAL

Power requirement	AC 120 — 240 V ∿, 50/60 Hz
Power consumption	24 W
Temperature	
Operating	5°C to 40°C
Storage	–20°C to 60°C
Operating position	Horizontal only
Dimensions (WxHxD)	435 x 97 x 335 mm
Weight	5.8 kg
Format	VHS standard
Tape width	12.65 mm
Tape speed (SP)	23.39 mm/sec (PAL/SECAM/MESECAM) 33.35 mm/sec (NTSC)
(LP)	11.70 mm/sec (PAL/SECAM/MESECAM)
(EP)	11.12 mm/sec (NTSC)
Maximum recording time (SP)	240 min. with E-240 video cassette (PAL/SECAM/MESECAM) 160 min. with T-160 video cassette (NTSC)
(LP)	480 min. with E-240 video cassette (PAL/SECAM/MESECAM)
(EP)	480 min. with T-160 video cassette (NTSC)

VIDEO

Signal system	PAL and SECAM colour signal and CCIR monochrome signals, 625 lines/50 fields NTSC colour signal and EIA monochrome signal, 525 lines/60 fields
Recording system	Rotary two-head helical scan system with slant double-azimuth combination video heads
Input	0.5 to 2.0 Vp-p, 75 ohms, unbalanced (BNC)
Output	1.0 Vp-p, 75 ohms, unbalanced (BNC)
Signal-to-noise ratio	43 dB (PAL/SECAM/MESECAM), 45 dB (NTSC) (Rohde & Schwarz noise meter) with PICTURE SHARPNESS control at centre position
Horizontal resolution	240 lines (PAL/SECAM), 220 lines (NTSC) with PICTURE SHARPNESS control at centre position

AUDIO

Recording system	Longitudinal track
Input	–8 dBs, more than 50 k-ohms, unbalanced (RCA)
Output	–6 dBs, less than 1 k-ohm, unbalanced (RCA)
Frequency range	70 Hz to 10,000 Hz

RF OUT

PAL/SECAM	UHF 32 — 40 adjustable (preset E36ch)
USA	UHF 29 — 39 adjustable (preset 34ch)
JAPAN	UHF 28 — 38 adjustable (preset 33ch)

TIMER

Clock reference	Quartz-crystal
Program capacity	1-year programmable timer/8 programs

ACCESSORIES

Provided accessories	Aerial cable, Infrared remote control unit, "R6/AA/UM-3" battery x 2
Optional accessory	RM-G30U wired remote control

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

No. 9258
May 1992

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: **Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.**

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

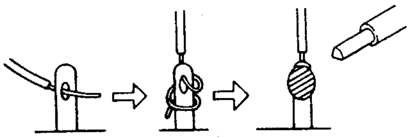


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

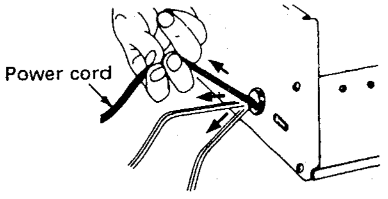


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

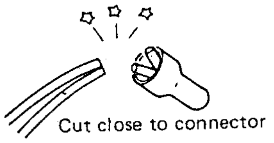


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

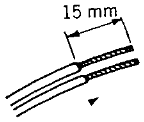


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

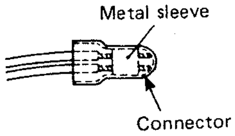


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

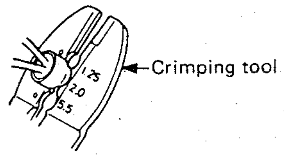


Fig. 6

(5) Check the four points noted in Fig. 7.

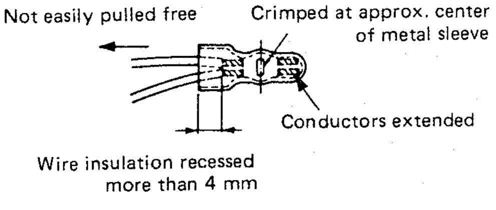

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

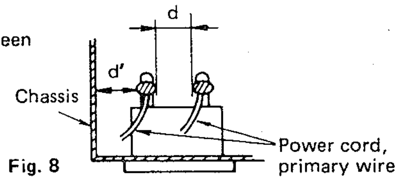


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

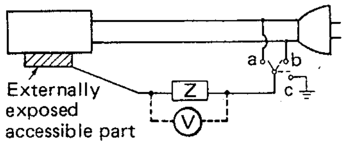


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

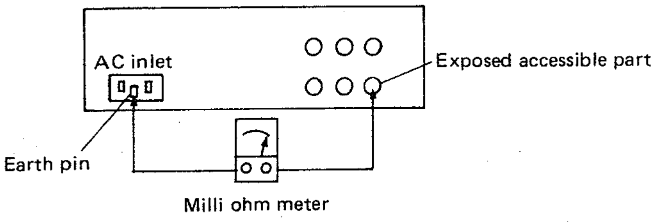


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

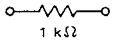
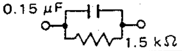
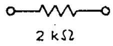
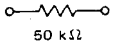
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	 1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	 0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	 2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		 50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

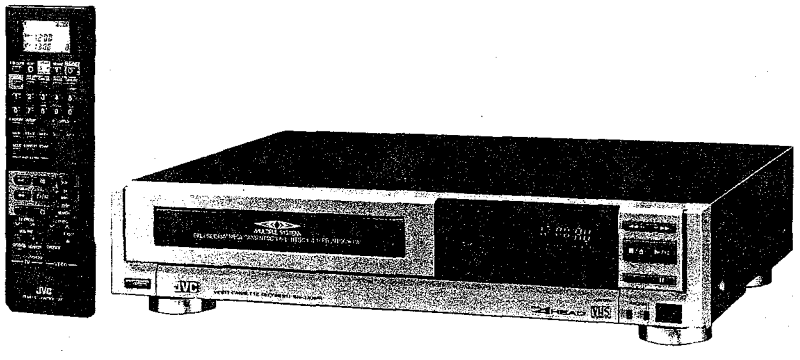
INSTRUCTIONS

JVC

SR-330MS

VIDEO CASSETTE RECORDER

VHS
PAL SECAM NTSC



PGD30002-275

SAFETY PRECAUTIONS

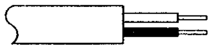
The rating plate and the safety caution are on the rear of the unit.

WARNING — DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

IMPORTANT (In the United Kingdom)
Mains Supply (240 V∿, 50 Hz only)

IMPORTANT

Do not make any connection to the Larger Terminal coded E or Green. The wires in the mains lead are coloured in accordance with the following code:



If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt — consult a competent electrician.

CAUTION

- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.

VHS
PAL SECAM NTSC

HQ

- Only cassettes marked "VHS" can be used with this video recorder.
- HQ VHS is compatible with existing VHS equipment.

Omkopplaren OPERATE på denna apparat är sekundärt kopplad och skiljer inte apparaten från nätet i läge OPERATE OFF.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

BEMAERK: I stilling OFF er apparatet stadig forbundet med lysnettet Hvis det ønskes fuldstændig afbrudt skai netledningen trækkes ud.

This unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

POWER SYSTEM
This set operates on any voltage between 120 and 240 V, 50/60 Hz with automatic switching.
There is no switch nor control for power line adaptation.

Video tapes recorded with this video recorder in the LP (Long Play) or EP (Extended Play) mode cannot be played back on a single-speed video recorder.

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PRECAUTIONS

VCR

- Avoid using the recorder in places subject to the following conditions:
  - extreme heat, cold, or humidity,
  - dust,
  - vibrations, and
  - poor ventilation.
- Be careful of moisture condensation.
  Do not use the recorder immediately after moving it from a cold place to a warm place. The water vapour in warm air will condense on the still-cold video head drum and tape guides and may cause damage to the tape and the recorder.
- Handle the recorder carefully.
  - Do not block the ventilation openings.
  - Do not place anything heavy on the recorder.
  - Do not place anything which might spill on the top cover of the recorder.
  - Use in horizontal (flat) position only.
- During transportation,
  - Avoid violent shocks to the recorder during packing and transportation.
  - Before packing, be sure to remove the cassette from the recorder.

VIDEO CASSETTES

- This recorder uses VHS cassettes.

Cassettes	Recording time	Recording system
E-240	240/480 minutes	PAL/SECAM/MESECAM
E-180	180/360 minutes	PAL/SECAM/MESECAM
E-120	120/240 minutes	PAL/SECAM/MESECAM
E-90	90/180 minutes	PAL/SECAM/MESECAM
E-60	60/120 minutes	PAL/SECAM/MESECAM
E-30	30/90 minutes	PAL/SECAM/MESECAM
T-160	160/480 minutes	NTSC
T-120	120/360 minutes	NTSC
T-90	90/270 minutes	NTSC
T-60	60/180 minutes	NTSC
T-30	30/90 minutes	NTSC

- S-VHS cassettes can also be used in VHS operation.
- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid extreme humidity, violent vibrations or shocks, strong magnetic fields (near a motor, transformer or magnet) and dusty places.
- Place the cassettes in cassette cases and position vertically.

REMOTE CONTROL UNIT

- Avoid violent shocks. Be especially careful not to drop the unit.
- Do not spill liquid on the unit or dampen the terminals.
- Do not place heavy objects on the unit.
- Avoid leaving the unit in places subject to direct sunlight or extremely high temperatures.

IMPORTANT: It may be unlawful to record or play back copyrighted material without the consent of the copyright owner.

FEATURES

Multi-system recording/playback circuitry with Virtual NTSC Playback on a PAL TV

The SR-330MS's built-in PAL/SECAM/MESECAM/NTSC 3.58/NTSC 4.43 recording circuitry gives you the flexibility to produce ready-made VHS video tapes that match signal standards anywhere in the world. 5-System playback circuitry is also incorporated, so you'll be able to play back any prerecorded cassettes you receive — regardless of where they originated. For even greater flexibility, the SR-330MS features advanced circuitry that lets you play back NTSC tapes on a PAL monitor or television. This is especially convenient if your head office happens to be in the United States or Japan since both countries use the NTSC system. You'll be able to watch video tapes produced in those countries on an ordinary PAL monitor, eliminating the need for an expensive multi-system monitor or separate NTSC monitor. A built-in multi-system RF converter (G, I, K, L, M) is also provided for direct RF connection to any type of TV*.

* Except PAL-N and PAL-M.

Note:
- ■ Recording requires an input video signal conforming to the appropriate television colour system and playback requires a TV monitor conforming to the appropriate television colour system except with NTSC playback on a PAL monitor.

Wired remote control capability

In addition to a full-function wireless LCD-programmable remote control, an optional wired remote control (RM-G30U) is available to give you the freedom of movement and the operational control you need in a classroom, during a business presentation, or at a conference. Clearly marked buttons give you full control over all basic tape functions including Play, Eject, Rewind, Fast Forward, and Shuttle Search.

High picture quality

For first-rate recording and playback performance, the SR-330MS incorporates JVC's advanced DA-4 (Double-Azimuth) head system. Using a different pair of precision-cut heads for each recording speed, the DA-4 head system ensures optimum picture quality in the SP, EP (NTSC), LP (PAL/SECAM/MESECAM) and special-effects modes. For improved clarity, sharpness, and detail, HQ (High Quality) picture improvement circuitry is also provided. Automatic Digital Tracking automatically compensates for any tracking variations during playback to assure a smooth, trouble-free performance at all times.

Special-effects playback

To facilitate careful viewing of specific scenes and visual search, a variety of special effects playback modes are available via the provided wireless remote control. These include noiseless* still and slow-motion playback at 5 different speeds, as well as variable-speed visual search.

* PAL/SECAM/MESECAM SP only.

Auto Voltage Switching Regulator

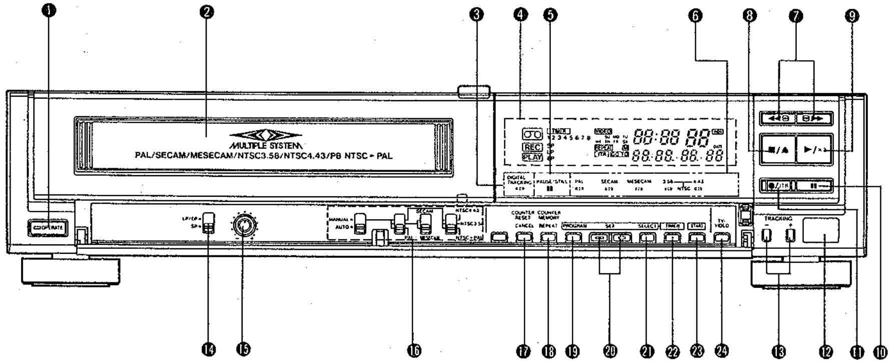
The SR-330MS features an automatic voltage switching regulator that operates on any electrical current from 120 V to 240 V AC.

Other features

- On-Screen record-pause mode display
- CTL time counter
- Advanced search functions including Index Search, Intro Search, Go-To, and Skip Search
- 1-year/8-event programmable timer
- 24-hour instant timer
- "Summer time" adjustment
- VCR lock function
- BNC connectors for VIDEO IN/OUT
- Aerial IN/OUT

CONTROLS & CONNECTORS

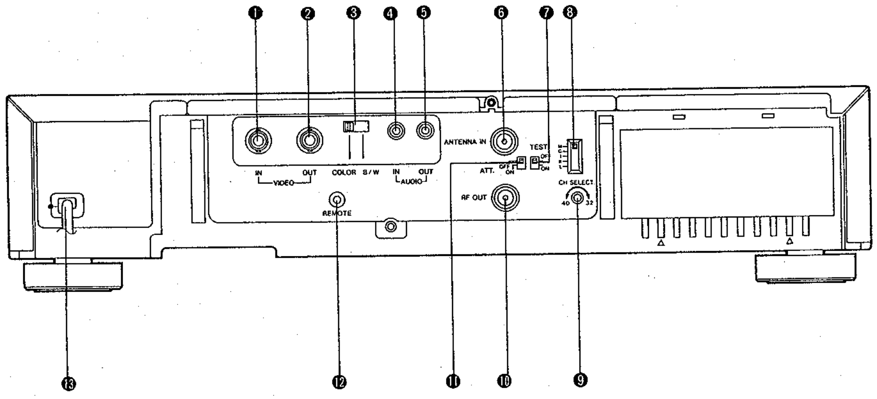
FRONT PANEL



- ① **OPERATE button with LED indicator**
- ② **Cassette loading slot**
- ③ **DIGITAL TRACKING indicator**
- ④ **Display panel**
- ⑤ **PAUSE/STILL indicator**
  - Pause mode: Lights together with the REC indicator on the display panel.
  - Still mode: Lights together with the PLAY indicator on the display panel.
- ⑥ **Colour system indicators**
  Indicates the colour system in use according to the detected input signal or the settings of the colour system select switches ⑯. ☞ p.14.
- ⑦ **◀◀/▶▶ (REW/FF) buttons**
  - Starts rewind or fast-forward when pressed in the Stop mode.
  - Starts high-speed shuttle search when pressed in the Play mode.
- ⑧ **■/⏏ (STOP/EJECT) button**
  - Stops the tape.
  - Ejects the cassette when pressed in the Stop mode.
- ⑨ **▶/X2 (PLAY) button**
  - Starts playback.
  - Starts double-speed playback when pressed in the Play mode.
  - Re-starts normal playback when pressed in the Still, Double-speed, or Search mode.
  - Re-starts recording when pressed in the Record-Pause mode.
- ⑩ **❙❙(PAUSE/STILL) button**
  - Temporarily stops recording when pressed in the Record mode.
  - Displays a still picture when pressed in the Play mode.
- ⑪ **●/ITR (REC) button**
  - Starts recording when pressed together with the PLAY button.
  - Activates the off-timer when pressed in the Record mode. ☞ p.24
- ⑫ **Infrared beam sensor window**
  Point the remote control at this window.
- ⑬ **TRACKING buttons**
  Adjusts tracking to minimise noise bars in playback picture.
- ⑭ **TAPE SPEED select switch**
  Selects the recording speed: Standard Play or Long Play/Extended Play. In PAL/SECAM/MESECAM, the LP mode will be engaged; in NTSC, the EP mode will be engaged.
- ⑮ **PICTURE SHARPNESS control**
  Turn for a softer or sharper playback picture.

- ⑯ **Colour system select switches**
  - **Master (AUTO/MANUAL) switch**
    Set as desired for automatic or manual selection of the television colour system. If you select the MANUAL mode, you must set the appropriate sub-switches as required. The SECAM and NTSC sub-switches must be set correctly even in the AUTO mode. ☞ p.14.
  - **System sub-switch**
    Use this switch to manually select the appropriate television colour system when the Master switch is set to MANUAL. ☞ p.14.
  - **SECAM sub-switch**
    Use this switch to select MESECAM or SECAM in recording. This switch must be set correctly even in the AUTO mode. ☞ p.14.
  - **NTSC sub-switch**
    Use this switch to select NTSC 3.58 or 4.43 in playback. Also be sure to set this switch correctly when playing back NTSC tapes on a PAL monitor. This switch must be set correctly even in the AUTO mode. ☞ p.14.
- ⑰ **COUNTER RESET/CANCEL button**
  This is a dual-function button.
  - Resets the CTL time counter.
  - Cancels programmed timer data.
- ⑱ **COUNTER MEMORY/REPEAT button**
  This is a dual-function button.
  - Engages the Counter Memory mode. ☞ p.20
  - Used in timer programming to select weekly or daily repeat options.
- ⑲ **PROGRAM/CLOCK ADJUST button**
  Changes the VCR's display mode in the following order: Clock mode, Timer Set mode, Clock Set mode.
- ⑳ **SET/TRACKING/V. LOCK buttons**
  To set data in the Clock Set mode or Timer Set mode. Also used as V.LOCK adjustment buttons to eliminate vertical vibration of still pictures.
- ㉑ **SELECT/SUMMER TIME ADJUST button**
  This is a dual-function button.
  - Selects the item to be set in the Clock Set or Timer Set mode.
  - For instant adjustment to or from Daylight Saving Time — press and quickly release to advance the clock by one hour, hold it pressed for 2 seconds to set the clock back by one hour. ☞ p.16
- ㉒ **TIMER button**
  Engages the Timer Standby mode after the 1-year/8-event timer has been programmed.
- ㉓ **START button**
  Activates 24-hour timer. ☞ p.24
- ㉔ **TV/VIDEO button**
  Switches RF output between the video signal and the aerial signal.

REAR PANEL

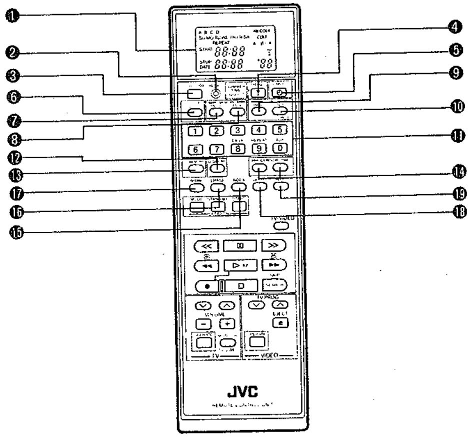


- ❶ **VIDEO IN connector**
- ❷ **VIDEO OUT connector**
- ❸ **Video mode select switch**
  This applies to both recording and playback.
  COLOR: Set to this position when the input or playback video signal is in colour.
  B/W: Set to this position when the input or playback video signal is monochrome.
- ❹ **AUDIO IN connector**
- ❺ **AUDIO OUT connector**
- ❻ **Aerial input connector (ANTENNA IN)**
  Connect an aerial to this connector.
- ❼ **TEST signal switch**
  Set to ON when tuning your television to the VIDEO CHANNEL. A test signal in the form of two vertical white bars will be available.
- ❽ **SYSTEM select switch**
  For RF converter system selection. Select M, G, I, K or L depending on the type of television. This switch is preset to G prior to shipment.
- ❾ **RF converter frequency adjustment screw (CH. SELECT)**
- ❿ **RF OUT connector**
  Connect to your television's aerial connector with the aerial cable (provided).
- ⓫ **Attenuator switch (ATT.)**
  When you connect an aerial to the TV through the VCR, set this switch to ON or OFF depending on the field strength of the aerial signal.
- ⓬ **REMOTE connector**
  Connect the optional wired remote control.
- ⓭ **Power cord**

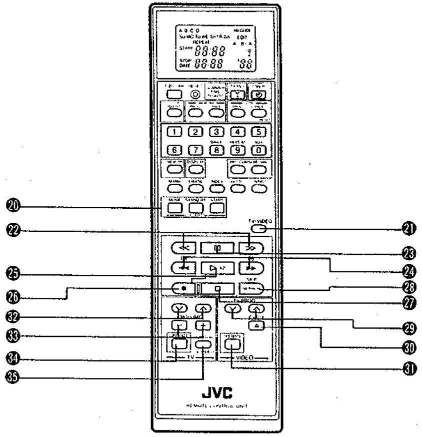
REMOTE CONTROL UNIT

- Point the remote control at the VCR's infrared beam sensor window.
- The maximum operating distance is about 8 m.

CONTROLS AND OPERATIONS



- ❶ **LCD panel**
  Refer to this panel when programming the remote control's built-in timer memory.
- ❷ **RESET button**
  To clear the LCD display's memory, insert a pointed object into the hole and press the initialise button inside. Normally do not touch this button.
- ❸ **A/B CODE button**
  When using two JVC video decks, press to switch this remote control from the "A" mode to "B" mode, or vice versa, depending on the deck to be controlled. ☞ p.10
- ❹ **TRANS/SUMMER TIME ADJUST button**
  This is a dual-function button.
  - Transfers the data held in the remote control's timer memory to the recorder.
  - Adjusts the remote control's clock to or from the summer time setting. ☞ p.16
- ❺ **TIMER button**
  - Engages the Timer Standby mode after the 1-year/8-event timer has been programmed.
- ❻ **CLOCK ADJUST button**
  Adjusts the remote control's clock.
- ❼ **MEMORY PROG. button**
  Programs the remote control's timer memory.
- ❽ **MEMORY CANCEL button**
  Cancels the programmed data in the remote control's timer memory.
- ❾ **VTR PROG. button**
  Engages the VCR's Timer Set mode.
- ❿ **VTR CANCEL/C. RESET button**
  This is a dual-function button.
  - Cancels the programmed data held in the VCR's timer memory in the Timer Set mode.
  - Resets the CTL time counter reading to "0H 00M 00S".
- ⓫ **Multi-purpose numeric keys**
  LCD clock setting: ☞ p.16
  LCD timer programming: ☞ p.27
  Go-To function: ☞ p.22
  Index Search: ☞ p.21
- ⓬ **DISPLAY button**
  Switches the VCR's display between the Counter and Clock modes. Also changes the LCD display from the Timer Set mode to the Clock mode.
- ⓭ **C. MEMORY button**
  Counter Memory button.
- ⓮ **CURSOR (⇤/⇥) buttons**
  When setting the LCD timer, use these buttons to move the cursor for data entry.
- ⓯ **INDEX button**
  Engages the Index Search mode. (☞ p.21)
- ⓰ **ERASE button**
  Press during playback to erase an index code. (☞ p.21)
- ⓱ **MARK button**
  Press during playback or recording to put an index code onto the tape. (☞ p.21)
- ⓲ **GO-TO button**
  Engages the Go-To mode. (☞ p.22)
- ⓳ **INTRO button**
  Engages the Intro Search mode. (☞ p.22)



⑳ DUET EDITING MODE, STAND-BY and START buttons
Use these buttons for simultaneous control of two JVC decks in editing. (☞ p.23)

㉑ TV/VIDEO button
Switches the RF output between the video signal and the aerial signal (when an aerial is connected to the TV through the VCR).

㉒ <</>> (Variable Search) buttons
For forward or reverse visual search at various speeds. (☞ p.19)

㉓ ❚❚ (PAUSE/STILL) button

㉔ ◄◄/►► (REW/FF,Shuttle Search) buttons

㉕ ►/X2 (PLAY/Double Speed) button

㉖ ● (REC) button
Starts recording when pressed together with the PLAY button.

㉗ ■ (STOP) button

㉘ SKIP SEARCH button
- Automatically advances at high speed through a 30-second tape segment when pressed in the Play mode. ☞ p.19

㉙ TV PROG. buttons (∨/∧)
Adjusts tracking of slow-motion pictures and V. Lock of still pictures. They have no effect on TV channel selection.

㉚ EJECT button

㉛ OPERATE button
Turns the VCR power ON or OFF. To engage the VCR Lock function, keep this button pressed for 2 seconds after turning the power off.

TV Operation buttons (designated TV models only)

㉜ TV PROG. buttons (∨/∧)
For TV receiver channel selection.

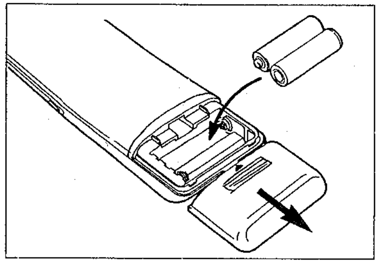
㉝ VOLUME buttons (–/+)
Adjusts the TV's sound volume.

㉞ OPERATE button

㉟ MONITOR (TV/VIDEO) button
Selects the TV's operating mode.
TV: To view broadcast programmes or tape programmes via RF OUT connection.
VIDEO: To view programmes via AV connection.

Installing the batteries
- Insert two "R6/AA/UM-3"-size batteries (provided).

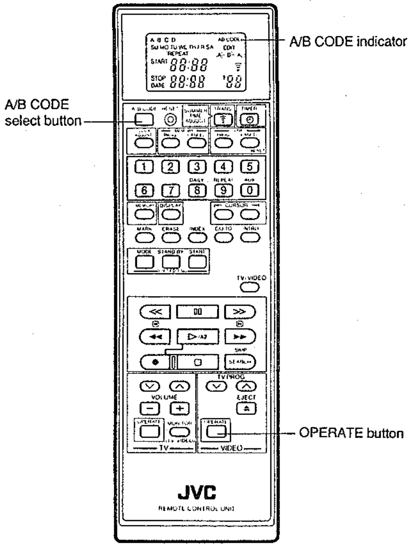
NOTES:
- Do not mix new and old batteries.
- Do not mix different types of battery.



A/B CODE SWITCHING

This VCR is initially set to respond to "A" code signals. Before operating the VCR, check that "A CODE" is displayed in the upper right hand corner of the LCD. If you have two JVC VCRs and want to prevent them from responding simultaneously to a single remote control, you can set this VCR to respond to "B" code signals. You will then be able to operate both VCRs with a single remote control.

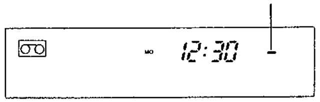
1. Unplug the VCR's power cord.
   - VCR's code memory is cleared.
2. Press the A/B CODE select button to engage the "B" mode; "B CODE" will appear on the LCD.
3. Plug the VCR in again.
4. Press the remote control's OPERATE button.
   - The VCR turns on. From now on it will respond only to "B" code signals.



VCR LOCK FUNCTION

This function helps prevent any accidental or unauthorised operation. When the VCR Lock mode is engaged, all operation buttons on the recorder are disabled. Operation is not possible unless the remote control is used.

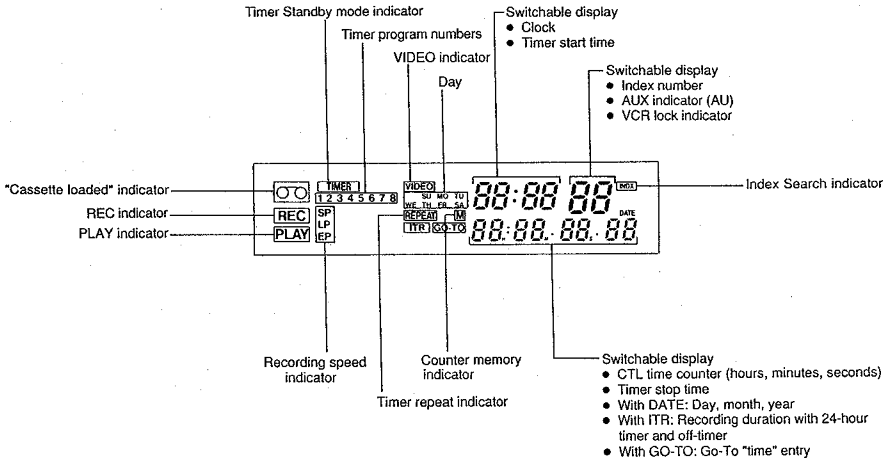
- Press the remote control's OPERATE button to turn the power off.
- Keep the OPERATE button pressed for an additional 2 seconds after the power LED indicator has gone off.
- The VCR Lock indicator (–) will appear on the display panel.
- To disengage this mode, press the remote control's OPERATE button to turn the power on. Pressing the TIMER button during timer recording also disengages this mode.



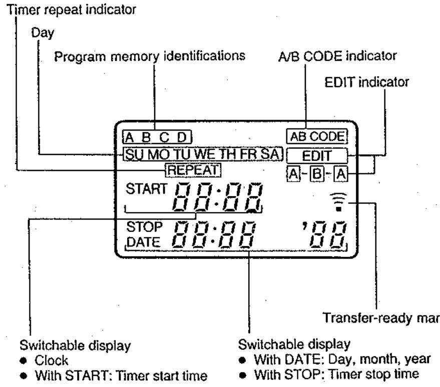
NOTES:
- While in the VCR Lock mode, the VCR can receive timer programmed data from the remote control.
- Timer recording is also possible. After completion of timer recording, the VCR returns to the VCR Lock mode (even after automatic cassette ejection at tape end).
- A cassette may be inserted while the recorder is in the VCR Lock mode. After the cassette has been inserted, the VCR Lock mode is re-engaged.

DISPLAYS

DISPLAY PANEL

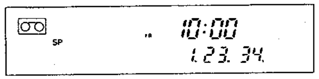

Timer Standby mode indicator
Timer program numbers
VIDEO indicator
Day
Switchable display
• Clock
• Timer start time
Switchable display
• Index number
• AUX indicator (AU)
• VCR lock indicator
"Cassette loaded" indicator
REC indicator
PLAY indicator
Index Search indicator
TIMER
1 2 3 4 5 6 7 8
REC
PLAY
SP
LP
EP
VIDEO
SU MO TU WE TH FR SA
REPEAT
ITR
GO-TO
M
INDX
DATE
88:88 88
88:88. 88. 88
Recording speed indicator
Counter memory indicator
Timer repeat indicator
Switchable display
• CTL time counter (hours, minutes, seconds)
• Timer stop time
• With DATE: Day, month, year
• With ITR: Recording duration with 24-hour timer and off-timer
• With GO-TO: Go-To "time" entry

LCD (Liquid Crystal Display) PANEL

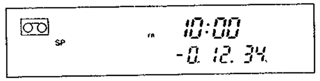

Timer repeat indicator
Day
Program memory identifications
A/B CODE indicator
EDIT indicator
A B C D
AB CODE
SU MO TU WE TH FR SA
EDIT
REPEAT
A-B-A
START 88:88
STOP
DATE 88:88
'88
Transfer-ready mark
Switchable display
• Clock
• With START: Timer start time
Switchable display
• With DATE: Day, month, year
• With STOP: Timer stop time

CTL TIME COUNTER

- Time counting is based on the recorded control signal. The counter does not function with non-recorded tape segments.
- Press COUNTER RESET to reset the counter to "00.00.00".
- The counter reading shows elapsed time from the "zero" position.


SP
10:00
1.23.34.

Forward direction


SP
10:00
-0.12.34.

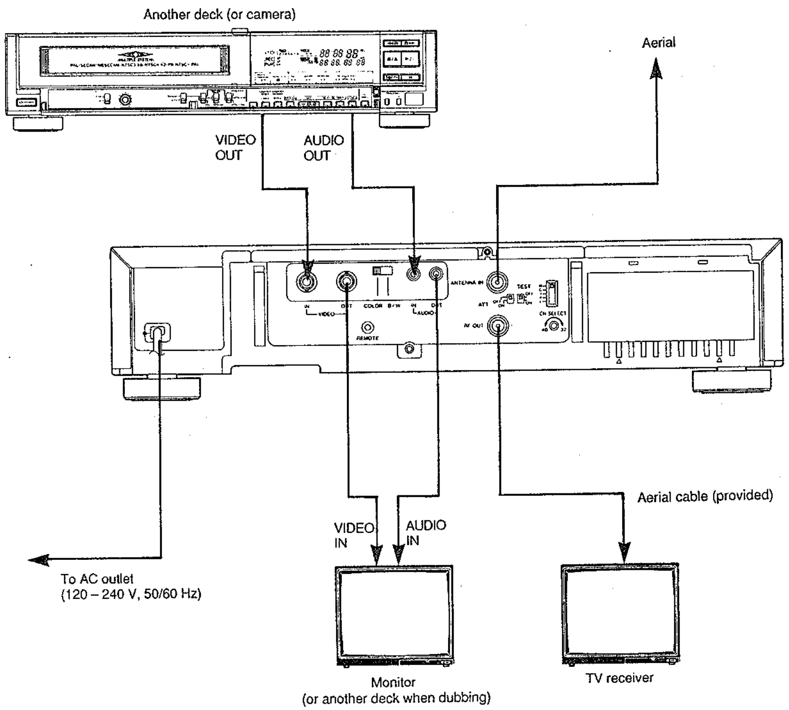
Reverse direction

NOTES:

- When a PAL/SECAM tape is rewound or fast-forwarded after NTSC tape playback (or vice-versa), the CTL time counter readout will be inconsistent. To stabilize the readout, first play back the tape at normal speed, then engage FF or REW.

CONNECTIONS & SYSTEM SETUP

CONNECTIONS


Another deck (or camera)
Aerial
VIDEO OUT
AUDIO OUT
Aerial cable (provided)
VIDEO IN
AUDIO IN
To AC outlet
(120 – 240 V, 50/60 Hz)
Monitor
(or another deck when dubbing)
TV receiver

NOTE:

- If necessary, use an appropriate plug adapter to match the type of AC wall outlet.

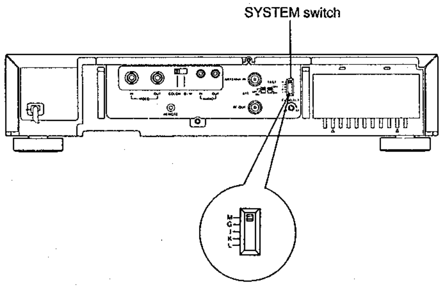
RF CONVERTER SWITCH SETTING

When using an RF connection, you must set the rear panel SYSTEM switch to correspond to your TV system.

M: Set to this position when using an NTSC-M (USA, Canada, Mexico, Japan, etc.) TV.
G: Set to this position when using a PAL-B/G (Germany, Austria, Italy, Scandinavia, etc.) or SECAM B/G (Saudi Arabia, Lebanon, Egypt, etc.) TV.
I: Set to this position when using a PAL-I (UK, Hongkong) TV.
K: Set to this position when using a PAL-D/K (China, Mongolia) or SECAM-D/K (Russia, Poland, Rumania, etc.) TV.
L: Set to this position when using a SECAM-L (France) TV.

NOTE:

- If no colours appear on the screen when using a multi-system TV set to AUTO, reset its system select switch to correspond to the SR-330MS's RF converter system switch setting.



VIDEO CHANNEL SETTING

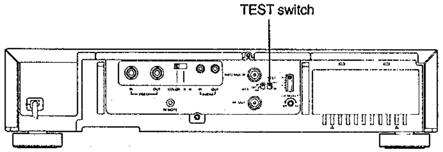
When using an RF connection, you must fine-adjust your TV to the VCR's RF output frequency.

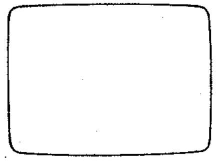
1. Turn on the recorder.
2. Set the TEST switch to ON.
3. Set your TV to UHF channel 36* according to the European channel system.
   - Fine-adjust the TV until the two vertical white bars are as sharp and clear as possible.
4. Reset the TEST switch to OFF.

* UHF channel 34 in the USA.
UHF channel 33 in Japan.

NOTES:

- You can also use a prerecorded VHS video cassette when fine tuning the TV. Adjust the TV until the clearest pictures and sound are obtained.
- If broadcasts on neighbouring channels cause interference, the RF converter output frequency must be set to a different channel. Available channels are UHF channels E 32 to 40 (29 to 39 according to the U.S. channel system and 28 to 38 to the Japanese channel system.). For more information, consult your JVC dealer.
- When using an RF connection, your TV must be set to the correct video channel.





COLOUR SYSTEM SETTING

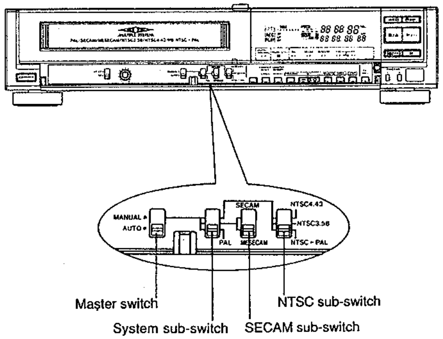
This recorder incorporates the necessary circuitry for recording or playing back PAL, SECAM, and NTSC signals (via an appropriate monitor). Additional circuitry allows you to view an NTSC tape on a PAL monitor.

Automatic Colour System Selection

1. Set the Master switch to AUTO.
   - The recorder automatically detects the type of input or playback signal and switches to the corresponding mode.
2. Set the SECAM sub-switch as required for recording.
   SECAM: To record an input SECAM or MESECAM signal in the SECAM mode.
   MESECAM: To record an input SECAM or MESECAM signal in the MESECAM mode (for playback on PAL TVs).
3. Set the NTSC sub-switch as required in playback.
   NTSC 3.58: To view an NTSC tape on an NTSC 3.58 monitor.
   NTSC 4.43: To view an NTSC tape on an NTSC 4.43 monitor.
   NTSC ► PAL: To view an NTSC tape on a PAL monitor.
4. Proceed with recording or playback.
   - The corresponding colour system indicator will light.
   - With inferior quality tapes, system detection may not be possible and the colour system indicators will light erratically. In this case, perform manual colour system selection (see below).

Manual Colour System Selection

1. Set the Master switch to MANUAL.
2. Select the desired colour system with the System sub-switch.
   Up: NTSC
   Middle: SECAM/MESECAM
   Down: PAL
3. Set the SECAM sub-switch as required for recording.
   SECAM: To record an input SECAM or MESECAM signal in the SECAM mode.
   MESECAM: To record an input SECAM or MESECAM signal in the MESECAM mode (for playback on PAL TVs).
4. Set the NTSC sub-switch as required in playback.
   NTSC 3.58: To view an NTSC tape on an NTSC 3.58 monitor.
   NTSC 4.43: To view an NTSC tape on an NTSC 4.43 monitor.
   NTSC ► PAL: To view an NTSC tape on a PAL monitor.
5. Proceed with recording or playback.



NOTES:

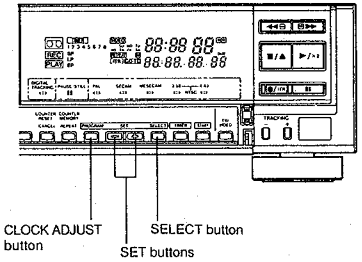
- When viewing NTSC tapes on a PAL monitor:
  - The playback picture may shrink vertically with black bars appearing on the top and bottom of the screen. This is not a malfunction of either the recorder or the TV.
  - The picture may not be in colour during search, still or slow-motion playback.
  - The picture may roll up or down. This can be corrected, using the monitor's V-HOLD control.
- Recording from NTSC to PAL is not possible.
- When the Master switch is set to MANUAL, be sure that the System sub-switch setting corresponds to the colour system of the input or playback signal. Recording or playback will not be performed correctly otherwise.

CLOCK SETTING

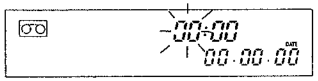
The SR-330MS has two independent clocks; one in the VCR and the other in the remote control. You can set the VCR clcok either directly or by transferring clock data from the remote control. Timer operation is not possible if the clock has not been set.

BUILT-IN CLOCK

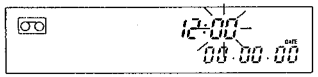
- Turn on the VCR.


CLOCK ADJUST button
SELECT button
SET buttons

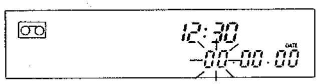
1. Press CLOCK ADJUST until the Clock Set mode is engaged.
   - The hour indication will blink.


00:00
DATE
00·00·00

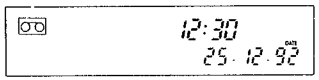
2. Enter the hour with either SET button, and press SELECT.


12:00
DATE
00·00·00

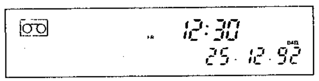
3. Enter the minutes with either SET button, and press SELECT.


12:30
DATE
00·00·00

4. Enter the day, month, and year in the same way.
   - In year setting, set only the last two digits of the year.


12:30
DATE
25·12·92

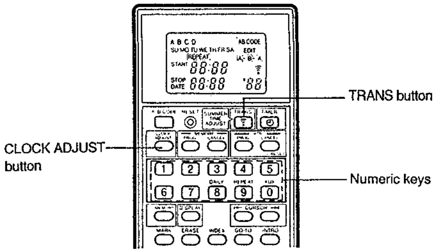
5. Press CLOCK ADJUST to end clock setting.
   - Time-keeping starts.
   - The day-of-the-week indication is automatically displayed.


12:30
DATE
25·12·92

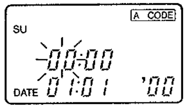
Power failure indicator
- A blinking "0:00" indicates power failure. Set the clock.
- Clock/timer backup time is about 3 minutes.

LCD CLOCK

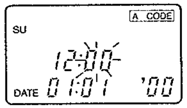
The LCD clock is independent of the VCR's clock. You can set the VCR's clock via remote control using the remote control unit's transfer function.

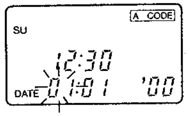

TRANS button
CLOCK ADJUST button
Numeric keys

1. Press CLOCK ADJUST.
   - The hour indication will blink.

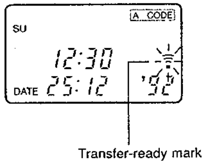

A CODE
SU
00:00
DATE 01:01 '00

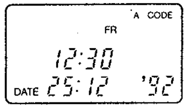
2. Enter the hour with numeric keys.
   - Always key in two digits. For a one-digit number, key in "0" first.
3. Enter the minutes with numeric keys.
4. Enter the day, month and year in the same way.
   - In year setting, set only the last two digits of the year.
   - After setting the year, the transfer-ready mark will appear and blink.


A CODE
SU
12:00
DATE 01:01 '00


A CODE
SU
12:30
DATE 01:01 '00

5. Press CLOCK ADJUST to end clock setting.
   - Time-keeping starts.
   - The day-of-the-week indication is automatically displayed.
   - To transfer the clock data to the VCR, press TRANS instead of CLOCK ADJUST.
   - If the transfer-ready mark disappears before transmission, press CLOCK ADJUST, then press TRANS while the transfer-ready mark is blinking; otherwise, the TRANS button will function as the SUMMER TIME ADJUST button.
   - To readjust the clock, press CLOCK ADJUST and then press either CURSOR button until the figure requiring correction blinks.

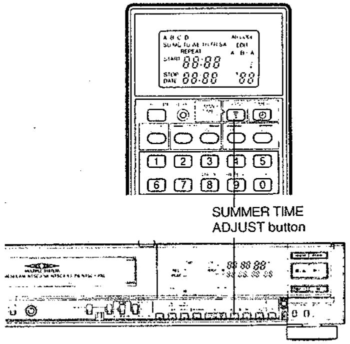

A CODE
SU
12:30
DATE 25:12 '92
Transfer-ready mark


A CODE
FR
12:30
DATE 25:12 '92

SUMMER TIME ADJUST

This convenient feature allows you to quickly make the annual clock adjustment to the "summer time" (daylight saving time) setting, and back again to normal time.

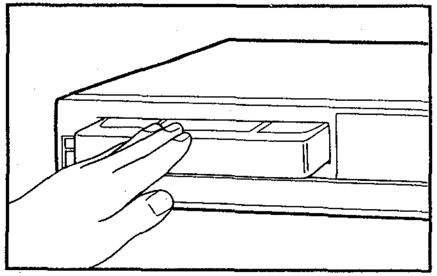
1. Press and quickly release the SUMMER TIME ADJUST button while in the Clock Set mode (for VCR's clock), or while in the Clock mode (for remote control's clock).
   - The clock will be set forward by one hour.
2. To switch back to regular time, hold the SUMMER TIME ADJUST button pressed for 2 seconds.
   - The clock will be set back by one hour.


SUMMER TIME ADJUST button

HANDLING VIDEO CASSETTES

LOADING

1. Insert a cassette with its label side facing you.
    - VCR power will come on automatically.



UNLOADING

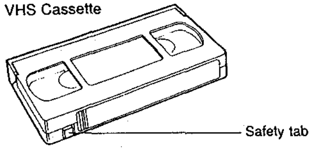
1. Press (STOP/EJECT) while in the Stop mode.
    - Even when the VCR power is off, simply press the (STOP/EJECT) button to unload a cassette.
    - If the cassette will not eject, check to see if "TIMER" is displayed on the display panel. If it is, press the TIMER button to turn off the Timer Standby mode.

WARNING

- Do not insert fingers or foreign objects into the cassette loading slot as this may result in personal injury or damage to the mechanism.
- Do not try to remove the cassette once automatic loading has started.

ACCIDENTAL ERASURE PREVENTION

- To prevent accidental recording on a recorded cassette, remove its safety tab.
- To record on it later, cover the hole with adhesive tape.



PLAYBACK

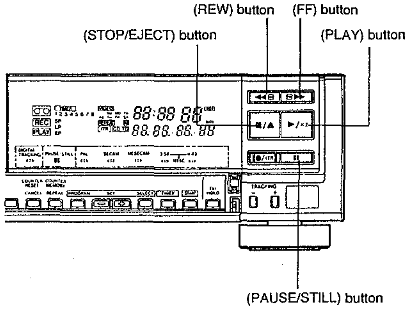
Confirm the settings of the colour system select switches. ☞ p.14.

BASIC PROCEDURE

1. Load a cassette.
    - If the safety tab on the cassette is removed, playback starts automatically.
2. Press (PLAY) once to start playback.
3. Press (STOP/EJECT) to stop playback.

NOTES:

- Tape speed selection is automatic.
- The VCR automatically rewinds when the tape reaches the end of the tape.



REWIND AND FAST-FORWARD

- Press (REW) or (FF) while in the Stop mode.
- Press (STOP/EJECT) to stop rewind or fast-forward.

NOTES:

- When a PAL/SECAM tape is rewound or fast-forwarded after NTSC tape playback (or vice-versa), the CTL time counter readout will be inconsistent. To stabilize the readout, first play back the tape at normal speed, then engage FF or REW.

DOUBLE-SPEED PLAYBACK

- Press (PLAY) while in the Play mode to engage the Double-Speed mode.
- Press (PLAY) to resume normal playback.

STILL AND FRAME ADVANCE

- Press (PAUSE/STILL) to view a still picture.
- Press (PAUSE/STILL) while in the Still mode to advance the picture frame by frame.
- Press (PLAY) to resume normal playback.

NOTES:

- To protect the tape, the Still mode is automatically cancelled after about 5 minutes.

SHUTTLE SEARCH

- Press (REW) while in the Play mode for high-speed reverse search at 9 times (PAL/SECAM/MESECAM) or 7 times (NTSC) normal speed.
- Press (FF) while in the Play mode for high-speed forward search at 9 times (PAL/SECAM/MESECAM) or 7 times (NTSC) normal speed.
- Press (PLAY) to resume normal playback.

NOTES:

- For brief searching, hold (REW) or (FF) depressed; releasing the button resumes normal playback.

VARIABLE-SPEED SEARCH

The variable search buttons (on the remote control) control both the direction and speed of tape search, making possible fast- and slow-motion playback in either forward or reverse direction from the Still or Play mode.

- To increase speed while in the forward direction, press >> repeatedly; to decrease, press << repeatedly. The direction reverses after leaving the Still mode.
- To increase speed while in the reverse direction, press << repeatedly; to decrease, press >> repeatedly. The direction reverses after leaving the Still mode.
- To resume normal playback, press (PLAY).

SKIP SEARCH

You can skip over unwanted segments during playback.

- Press SKIP SEARCH (on the remote control). The VCR will fast-motion through from 30 seconds to 2 minutes of tape depending on how many times the button is pressed (up to 4 times).
- Playback resumes automatically.
- Press (PLAY) to cancel the Skip mode midway.

TRACKING CONTROL

This VCR is equipped with automatic Digital Tracking to ensure the best possible picture quality.

- When playback starts, tracking is automatically adjusted.
- The DIGITAL TRACKING indicator blinks while adjusting and remains lit after completion of adjustment.
- Automatic tracking is effective only during normal playback.

If you wish to adjust tracking manually, you can override this function.

1. Press TRACKING "–" and "+" simultaneously to cancel the Auto Tracking mode.
   - The DIGITAL TRACKING indicator turns off.
2. Adjust tracking by pressing TRACKING "–" or "+" to minimise noise bars.

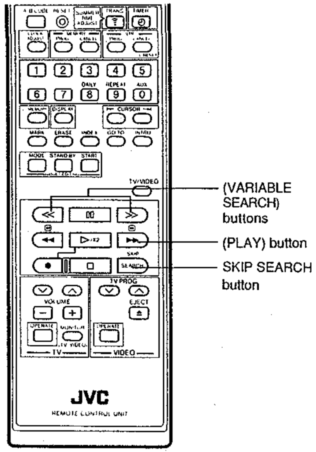
NOTES:

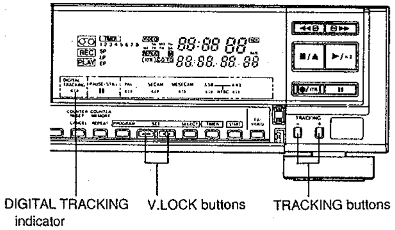
- When a new cassette is inserted, Auto Tracking resumes automatically.
- To manually return to the Auto Tracking mode, press both TRACKING buttons simultaneously.

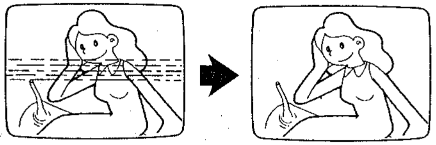
Tracking Adjustment In Double-Speed, Slow, or Still Playback

The DIGITAL TRACKING indicator turns off when a mode other than normal playback is entered.

- To adjust tracking during double-speed or slow-motion playback, simply press either TRACKING button to minimise noise bars.
- To adjust tracking during still playback, press (PAUSE/STILL) a few more times to minimise noise bars.







V.LOCK ADJUSTMENT

Vertical jitter in still pictures can be corrected with the V.LOCK buttons.

- Press either V.LOCK button to minimise jitter.

TAPE ACCESS

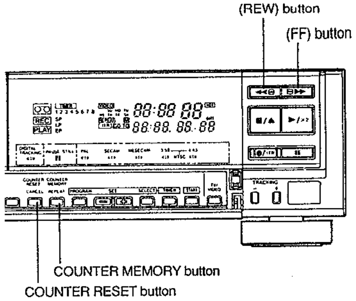
COUNTER MEMORY

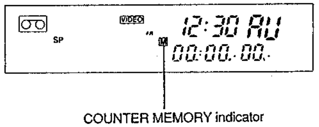
Allows you to automatically locate a specific tape position in rewind or fast-forward. Useful when you wish to re-view the same tape segment or view the segment you have just recorded.

1. Press COUNTER RESET at the position you wish to locate later.
   - The counter resets to "zero".
2. Press COUNTER MEMORY.
   - "M" appears on the display panel.
3. When you wish to return to the zero-marked position, stop the tape and press (REW) or (FF).
   - The tape will stop at counter "zero" (an error of a few seconds can be expected).
   - Automatic start of playback is possible when combined with Next-Function Memory (see below).

NOTES:

- Once you have used the Counter Memory function, cancel it by pressing COUNTER MEMORY ("M" disappears), otherwise the tape will always stop at counter "zero" in rewind or fast-forward.





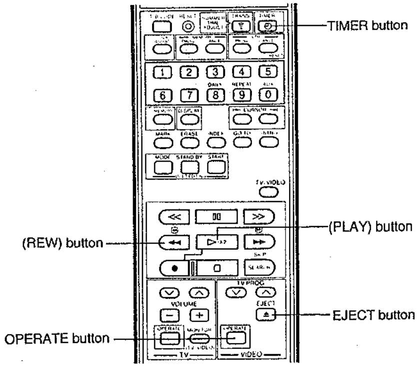
NEXT-FUNCTION MEMORY

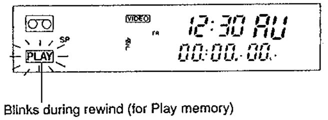
You can specify the mode you want to enter after rewind (Play, Timer Standby, Eject or Power Off) immediately after pressing the (REW) button.

1. Press (REW) while in the Stop mode.
2. Press the corresponding button ((PLAY), TIMER, EJECT or OPERATE) within 2 seconds.
   - At completion of rewind, the selected mode is entered automatically.
   - If used with the Counter Memory function (see above), the selected mode will be entered at counter "zero" rather than at the beginning of the tape.
   - During rewind, the corresponding indicator (PLAY, TIMER, "Cassette loaded" indicator, or OPERATE button's LED) blinks. Timer indicator also lights during rewind for Timer Standby Memory.
   - To cancel the memory during rewind, press (STOP) for Play Memory, EJECT for Eject Memory, TIMER for Timer Standby Memory, or POWER for Power Off Memory.

NOTE:

- Next-Function Memory (except Eject Memory) is also possible via the VCR's controls.

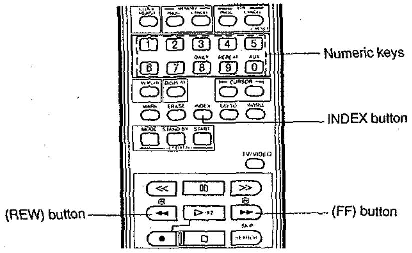


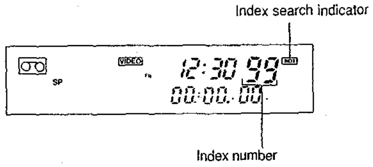


INDEX SEARCH

This function gives you quick access to any one of up to 99 index codes in either direction. The recorder automatically marks index codes at the beginning of each recording.

1. Press INDEX in the Play or Stop mode. "INDX" appears on the display panel.
2. Specify the index number using the numeric keys within 10 seconds. The specified number appears on the display panel.
3. Press (REW) or (FF). Index Search will start in the corresponding direction.
   - The index numbers are counted down to 0, then normal playback starts.
   - If the INDEX button was pressed in the Play mode, the screen will show search pictures; if the button was pressed in the Stop mode, then the index codes are detected in the Rewind or Fast-Forward mode.





NOTES:
- To cancel Index Search, press STOP.
- If the desired index code marks the beginning of the current or next programme, skip step 2 and just press the (REW) or (FF) button.
- When a PAL/SECAM tape is rewound or fast-forwarded after NTSC tape playback (or vice-versa), the CTL time counter readout will be inconsistent. To stabilize the readout, first play back the tape at normal speed, then engage FF or REW.

INDEX MARK/ERASE

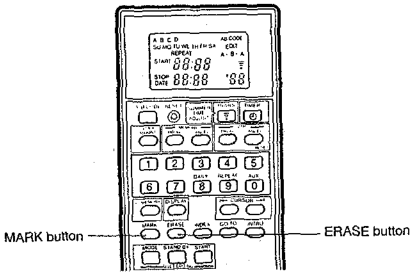
Index codes can also be added or deleted manually.

To Mark

1. Press MARK while in the Play or Record mode. The recorder will mark an index code at that position.
   - "INDX" will blink on the display panel during Mark.

To Erase

1. Press ERASE while in the Play or Still mode. The recorder will search for the nearest index code and delete it.
   - "INDX" will light on the display panel during search and blink during erasing process.

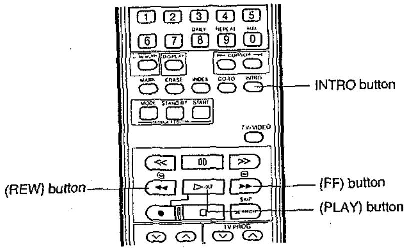


NOTES:
- Index codes cannot be added or erased if the safety tab has been removed from the cassette.
- Adding or erasing index codes in the vicinity of switching points between SP and EP/LP recordings may cause picture distortion.

INTRO SEARCH

This function lets you visually check the beginning of each index-marked programme in fast-motion. Convenient for checking programme contents.

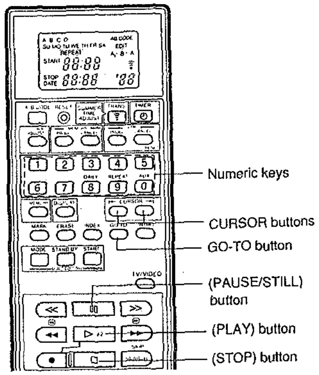
1. Press INTRO while in the Play or Stop mode.
   - The INDX indicator on the display panel will light.
2. Press (REW) or (FF) within 2 seconds.
   - Each time an index code is detected, the initial 5-second section is played back in fast-motion.
3. When you find the section you want to view, simply press (PLAY).



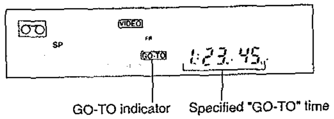
GO-TO

This function gives you direct access to any point on the tape by simply specifying the time from the current position or the beginning of the tape.

1. Press GO-TO while in the Play, Still or Stop mode.
   - The counter will change to Go-To mode.
2. If you wish to specify the time from the current tape position, first press either CURSOR button to specify the direction, then input the time using the numeric keys.
   If you wish to specify the time from the beginning of the tape, simply input the time using the numeric keys.
3. Press (PLAY) or (STOP) (or (PAUSE/STILL) if you have pressed GO-TO while in the Play or Still mode).
4. After the specified point is reached, the VCR will automatically enter the designated mode (Play, Stop, or Still).



NOTES:
- Each step in the procedure must be followed by the next within 60 seconds.
- If the specified time exceeds the tape length, the tape fast-forwards to the end and then rewinds to the beginning.
- When a PAL/SECAM tape is rewound or fast-forwarded after NTSC tape playback (or vice-versa), the CTL time counter readout will be inconsistent. To stabilize the readout, first play back the tape at normal speed, then engage FF or REW.



RECORDING

BASIC PROCEDURE

- Connect necessary components correctly. ☞ p.12
- Confirm the signal system of the external source being used and set the colour system select switches accordingly.
- To monitor via RF connection, press the TV/VIDEO button to engage the Video mode.

1. Load a cassette with safety tab in place.
2. Select the recording speed (SP/EP/LP).
3. Press (REC) and (PLAY).
4. To temporarily stop recording, press (PAUSE/STILL).
   - A white horizontal bar appears on the screen which shrinks in 4 stages as pause time elapses. When the last quarter starts blinking and disappears (after about 5 minutes), the recorder automatically enters the Stop mode.
5. To re-start recording, press (PLAY).
6. To end recording, press (STOP/EJECT).

NOTES:

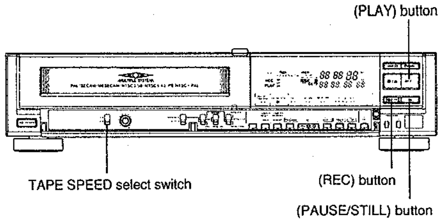
- An index code is recorded when recording starts. Do not press any buttons while "INDX" is blinking on the display panel.
- The VCR automatically rewinds when the end of the tape is reached.

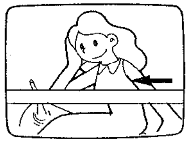
SIMULTANEOUS CONTROL OF TWO RECORDERS IN EDITING

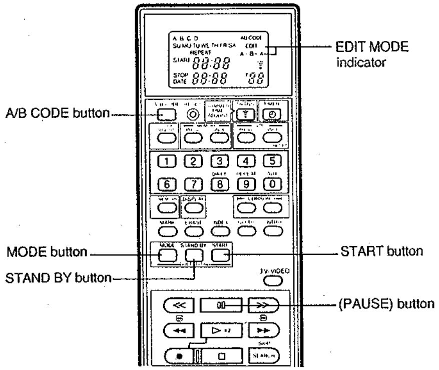
This feature simplifies editing/dubbing by making it possible for you to simultaneously deliver separate commands to two JVC recorders via a single remote control.

- Make all necessary preparations for recording.
- Be sure that one unit is set to respond to A code signals and the other to B code signals. (☞ p.10)
- Be sure the remote control's clock has been set. Otherwise, this type of editing is not possible.

1. Press the MODE button in the DUET EDITING section on the remote control.
   - "EDIT Ⓐ → Ⓑ" appears on the LCD. To edit from B to A, press the A/B CODE button; "EDIT Ⓑ → Ⓐ" appears.
2. Press STAND BY.
   - The player enters the Still mode.
   - The recorder enters the Record-Pause mode.
3. Locate the edit-IN point on the source tape.
   - In this state, only the player responds to the remote control's commands.
4. Press ❚❚ to fix the IN point.
5. Press START.
   - The player enters the Play mode.
   - The recorder enters the Record mode.
6. Press ❚❚.
   - The player enters the Still mode.
   - The recorder enters the Record-Pause mode.
7. To continue editing, repeat steps 3 — 6.
8. To end editing, press MODE until the EDIT indication disappears.




PAUSE MODE indicator



NOTES

- Due to the automatic backspacing system, it takes a few seconds before the recorder actually starts recording after the START button is pressed. The player, however, immediately starts playback from the specified IN point. For more accurate editing and a stable edited picture, we recommend that you specify a point slightly before the intended IN point.

INSTANT TIMER RECORDING (OFF-TIMER)

You can set the VCR to automatically stop recording and shut off after a specified time-span.

1. Press (REC) while in the Record mode to activate the off-timer.
   - "ITR" blinks on the display panel. Recording duration is set at "0:30" (30 minutes).
   - The off-time can be delayed in 30-minute increments (up to 4 hours) by pressing (REC).
   - If the end of the tape is reached during recording, the cassette is ejected and power turned off.

NOTES:

- Instant timer recording has priority over programmable timer recording. Be sure that the preset times do not overlap.

24-HOUR TIMER RECORDING

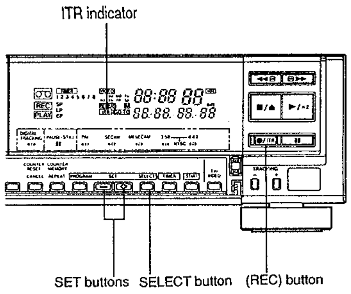
You can set the VCR to start recording at any time within the next 24 hours and stop automatically after a specified duration of time.

- Prepare connected components as necessary.

1. Press START to enter the 24-hour timer set mode.
   - "ITR" appears on the display panel.
2. Press START to delay the start time in 30-minute increments.
   - More precise time setting is possible later using the SELECT/SET buttons.
3. Press (REC) to set the recording duration.
   - "0:30" (30 minutes) appears first and can be delayed in 30-minute increments (up to 4 hours) by pressing (REC).
4. Press OPERATE to turn the power off (within 5 seconds).
   - "ITR" remains lit.
   - If "ITR" blinks, turn the power on and check the data.
   - If "ITR" and the "cassette loaded" indicator blink, the loaded cassette does not have a safety tab. Change the cassette or reseal the slot. ☞ p.17

NOTES:

- To cancel the Instant Timer Set mode, press the CANCEL button twice.
- If the end of the tape is reached during recording, the cassette is ejected and power turned off.
- 24-Hour timer recording has priority over programmable timer recording. Be sure that the preset times do not overlap.

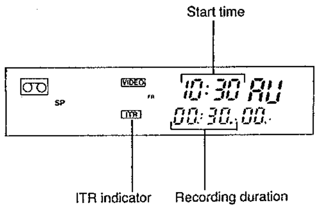


Off-Time Setting In 1-Minute Increments

Once the off-timer has been activated, the off-time can be set more precisely (up to 8 hours, 59 minutes).

After step 1:

2. Press SELECT.
3. Press SET to set the hour, and press SELECT.
4. Press SET to set the minute, and press SELECT.
   - Make entries within 10 seconds at each step.



More Precise Time Setting In 1-Minute Increments

Once start time and recording duration have been set, more precise adjustment is possible.

After step 3:

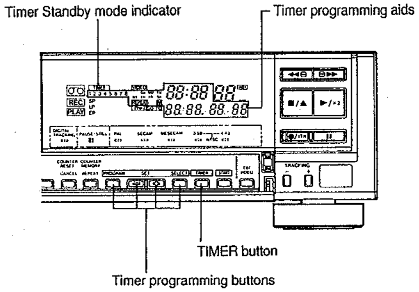
4. Press SELECT until the digits you want to change blink.
5. Press SET to correct the data, and press SELECT.
6. Repeat steps 4 and 5 as required, and press SELECT.
   - Make entries within 10 seconds at each step.
   - Recording duration can be set for up to 8 hours, 59 minutes.

PROGRAMMABLE TIMER RECORDING

TIMER RECORDING PROCEDURE

Unattended start and stop of recording is possible using the 1-year/8-event programmable timer.

- Make necessary preparations for connected components.


Timer Standby mode indicator
Timer programming aids
TIMER button
Timer programming buttons

1. Load a cassette with safety tab in place.
2. Program the timer either with the VCR's SET and SELECT buttons or the remote control.
   Two methods of timer programming are available:
   - Local programming: Program the timer with the recorder's controls while referring to the display panel.
   - Independent remote programming: Program the remote control's memory using the remote control's keys while referring to the LCD. Programmed data can then be transferred to the recorder.

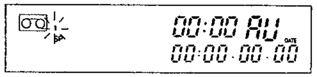
   Refer to relevant sections below.
3. Press the TIMER button to enter the Timer Standby mode.
   - "TIMER" and program number(s) appear on the display panel.
   - Recording will start at the preset time, and stop at the preset time.
   - If the end of the tape is reached during recording, the cassette is ejected and power turned off.

NOTES:

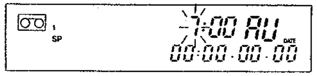
- If you need to use the VCR while it is in the Timer Standby mode, press TIMER and then OPERATE. After using the VCR, be sure to press TIMER to engage the Timer Standby mode.

LOCAL PROGRAMMING

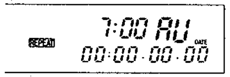
1. Press PROGRAM.
   - The display changes to the Timer Set mode with program 1 blinking.
   - To advance to another program, select a program number with SET.
2. Press SELECT.


00:00 AU
00·00·00·00

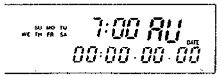
3. Enter the start time with SET and SELECT.
   - Select the item to be set with SELECT
   - Set the desired data with either SET –/+.
   - For weekly setting, press REPEAT once.
   - For daily setting, press REPEAT twice.


SP
00·00·00·00

Blinking item is ready to be set.

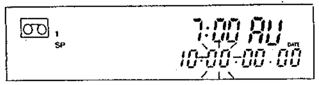

REPEAT
7:00 AU
00·00·00·00

Weekly setting

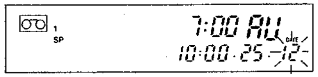

SU MO TU WE TH FR SA
7:00 AU
00·00·00·00

Daily setting

4. Enter the stop time with SET and SELECT.

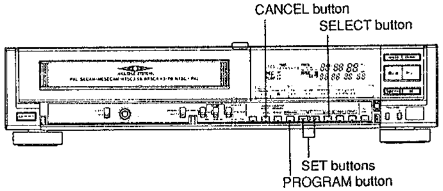

SP
7:00 AU
10·00·00·00

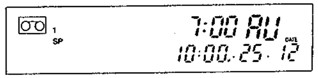
5. Enter the date with SET and SELECT.
   - For daily setting starting on the day of setting, there is no need to enter any date figure.
6. Press PROGRAM to end programming.
   - Check that the recording speed is set correctly. Use the TAPE SPEED switch to change the setting if necessary.
   - To immediately engage the Timer Standby mode, press TIMER.


SP
7:00 AU
10·00·25·12

Checking timer data

1. Press PROGRAM.
   - Timer data for program 1 appears on the display panel.
   - To advance to another program, select a program number with SET.
2. Press SET to successively display timer data in order of program number.
3. Check the data.
   - To return to the Clock mode, press PROGRAM. The Clock mode is returned to automatically if no action is taken for 60 seconds.

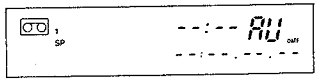

CANCEL button
SELECT button
SET buttons
PROGRAM button


SP
7:00 AU
10·00·25·12

Cancelling timer data

- Cancel the Timer Standby mode.

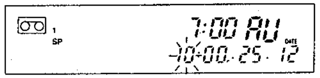
1. Press PROGRAM.
   - Timer data for program 1 appears on the display panel.
2. Press SET to select the program you wish to cancel.
3. Press CANCEL.
   - Programmed data is cleared from memory.



Correcting timer data

After step 1:

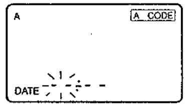
2. Select the program number you wish to correct with SET.
3. Press SELECT to move to the item to be corrected and enter new data with SET.


SP
7:00 AU
10·00·25·12

REMOTE PROGRAMMING

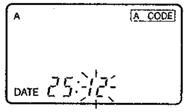
- The remote control can store 4 programs (A, B, C and D) in memory.
- Programmed data is retained in memory even after it has been transferred to the recorder.

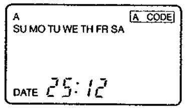
1. Press MEMORY PROG.
   - The LCD is ready for program "A" data entry.
   - Press MEMORY PROG. again to advance to another program.



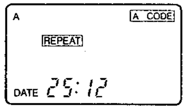
Blinking item is ready to be set.

2. Enter the date with the numeric keys.
   - For daily setting, press [8] (DAILY) and enter the start date. If recording is to take place the same day, press CURSOR → without entering any date figure.
   - For weekly setting, press [9] (REPEAT) and enter the start date.



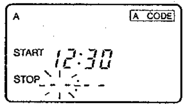


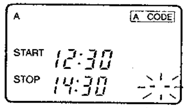
Daily setting



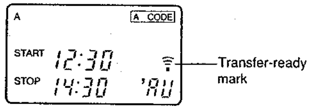
Weekly setting

3. Enter the start time with the numeric keys.
   - Always key in two-digit numbers for the hours and minutes, eg. 09:05.
4. Enter the stop time with the numeric keys.





5. Press [0] (AUX).
   - The transfer-ready mark will appear and blink.
6. Point the remote control at the VCR's Remote Sensor window and press TRANS.
   - The programmed data will be loaded into the lowest available VCR program memory (1–8).
   - If all programs are full, the VCR's clock will blink and transmission will not take place. In this case, press VTR PROG. to select a programme(s) for cancellation, and then press VTR CANCEL to cancel it. After cancelling a program, press TRANS again to transfer data.
   - Check that the recording speed is set correctly. Use the VCR's TAPE SPEED switch to change the setting if necessary.
   - To engage the Timer Standby mode, press TIMER.



Checking LCD timer data

1. Press MEMORY PROG.
2. Programmed data will appear on the LCD with the transfer-ready mark blinking. Press MEMORY PROG. to successively display timer data for programs A, B, C and D.
3. Check the data.
4. To return to the Clock mode, press DISPLAY.
   - The Clock mode is also returned to when MEMORY PROG. is pressed while program D is displayed.

Cancelling LCD timer data

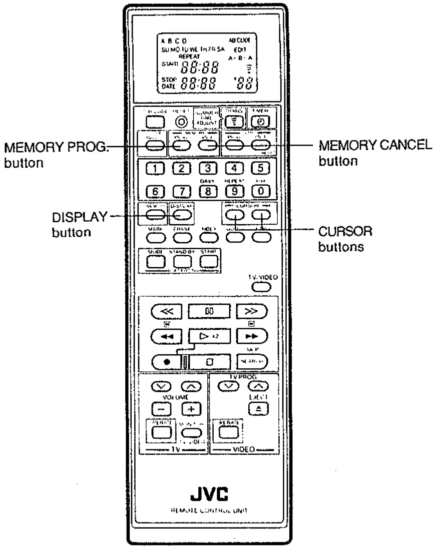
1. Press MEMORY PROG.
2. Select the program memory you wish to cancel with MEMORY PROG.
   - The transfer-ready mark will be blinking.
3. Press MEMORY CANCEL.
   - Programmed data is cleared from memory.
4. To return to the Clock mode, press DISPLAY.

Correcting LCD timer data

1. Press MEMORY PROG.
2. Select the program memory you wish to correct with MEMORY PROG.
   - The transfer-ready mark will be blinking.
3. Press either CURSOR button until the position which requires correction blinks. Enter new data with numeric keys.
4. To return to the Clock mode, press DISPLAY.

NOTES:

- Timer programming is not possible unless the clock has been previously set.
- The stop time must be set within 24 hours of the start time.
- Invalid date and time data will be rejected.
- Tape speed in timer recording is determined by the VCR's TAPE SPEED switch setting.



TROUBLESHOOTING GUIDE

POWER AND TAPE TRANSPORT PROBLEMS

Symptoms	Check points
Clock is functioning normally, but the VCR power cannot be turned on.	• Is "TIMER" displayed on the display panel? — Press the TIMER button to cancel the Timer-Standby mode. • Is the VCR Lock function activated? — Use the remote control to turn the power on.
Tape stops during rewind or fast-forward.	• Has the COUNTER MEMORY button been pressed? — Press again to cancel the counter memory.

RECORDING PROBLEMS

Symptoms	Check points
Recording will not start.	• Is the cassette loaded? • Has the cassette's safety tab been removed? — Reseal the slot with adhesive tape.
Timer recording is not possible.	• Have you set the clock and programmed the timer correctly? — Check again. • Is "TIMER" displayed on the display panel? — If not, press the TIMER button to display "TIMER".

PLAYBACK PROBLEMS

Symptoms	Check points
Tape is running but there is no playback picture.	• Is the monitor's input select switch set correctly? • If you are using a TV receiver via AV connection, is it set to the "AV" mode? — If not, set it to the "AV" mode. • If you are using a TV receiver via RF connection, is it set to the correct video channel? — If not, set it correctly.
Picture with no sound, sound with no picture, picture with no colour, etc.	• If you are using a TV receiver via RF connection, is the system select switch set to the appropriate position? — Set to M, G, I, L or K depending on the system of your TV receiver. (☞ p.14)
Noise and jitter problems.	• Refer to "TRACKING CONTROL" and "V.LOCK ADJUSTMENT". (☞ p.19).

OTHERS

Symptoms	Check points
Timer setting is not possible.	• Has the clock been set? — Set the clock.
Index Search does not function.	• Adjacent index codes may be too close to each other. — Erase some index codes and mark new ones, if necessary, with sufficient distance between two index codes.
Remote control does not function.	• Are the batteries depleted? — Replace with new ones. • If it is not a battery problem, check the A/B code setting on the remote control. (☞ p.10)

SPECIFICATIONS

GENERAL

Power requirement : AC 120 — 240 V ∿, 50/60 Hz
Power consumption : 24 W
Temperature
Operating : 5°C to 40°C
Storage : –20°C to 60°C
Operating position : Horizontal only
Dimensions (WxHxD) : 435 x 97 x 335 mm
Weight : 5.8 kg
Format : VHS standard
Tape width : 12.65 mm
Tape speed (SP) : 23.39 mm/sec (PAL/SECAM/MESECAM) 33.35 mm/sec (NTSC)
(LP) : 11.70 mm/sec (PAL/SECAM/MESECAM)
(EP) : 11.12 mm/sec (NTSC)
Maximum recording time (SP) : 240 min. with E-240 video cassette (PAL/SECAM/MESECAM) 160 min. with T-160 video cassette (NTSC)
(LP) : 480 min. with E-240 video cassette (PAL/SECAM/MESECAM)
(EP) : 480 min. with T-160 video cassette (NTSC)

VIDEO

Signal system : PAL and SECAM colour signal and CCIR monochrome signals, 625 lines/50 fields NTSC colour signal and EIA monochrome signal, 525 lines/60 fields
Recording system : Rotary two-head helical scan system with slant double-azimuth combination video heads
Input : 0.5 to 2.0 Vp-p, 75 ohms, unbalanced (BNC)
Output : 1.0 Vp-p, 75 ohms, unbalanced (BNC)
Signal-to-noise ratio : 43 dB (PAL/SECAM/MESECAM), 45 dB (NTSC) (Rohde & Schwarz noise meter) with PICTURE SHARPNESS control at centre position
Horizontal resolution : 240 lines (PAL/SECAM), 220 lines (NTSC) with PICTURE SHARPNESS control at centre position

AUDIO

Recording system : Longitudinal track
Input : –8 dBs, more than 50 k-ohms, unbalanced (RCA)
Output : –6 dBs, less than 1 k-ohm, unbalanced (RCA)
Frequency range : 70 Hz to 10,000 Hz

RF OUT

PAL/SECAM : UHF 32 — 40 adjustable (preset E36ch)
USA : UHF 29 — 39 adjustable (preset 34ch)
JAPAN : UHF 28 — 38 adjustable (preset 33ch)

TIMER

Clock reference : Quartz-crystal
Program capacity : 1-year programmable timer/8 programs

ACCESSORIES

Provided accessories : Aerial cable, Infrared remote control unit, "R6/AA/UM-3" battery x 2
Optional accessory : RM-G30U wired remote control

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

SECTION 1
DISASSEMBLY AND MECHANISM ADJUSTMENTS

1.1 DISASSEMBLY

1.1.1 Top cover

1. Refer to Fig. 1-1-1 and set for the EJECT (Stop) mode and disconnect VCR from AC power.
2. Take out 4 screws Ⓐ and 1 screw Ⓑ. To remove the top cover, slide it in the direction of the arrow and lift it away.

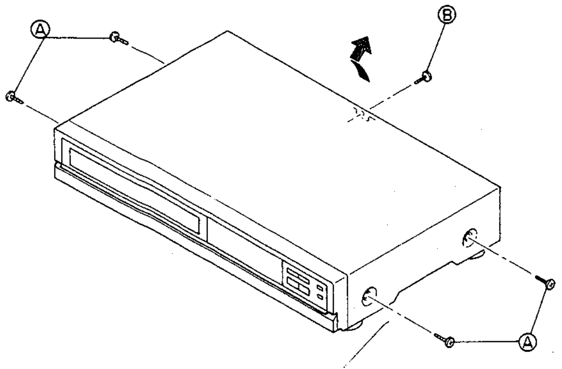


Fig. 1-1-1

1.1.2 Front panel assembly

1. Remove the top cover.
2. Carefully disengage 3 tabs Ⓒ of the front panel assembly from the upper side of the chassis.
3. Refer to Fig. 1-1-2 and pull the front panel assembly forward you to disengage 3 tabs Ⓓ of the front panel assembly from the bottom side of the chassis, then remove the front panel assembly.

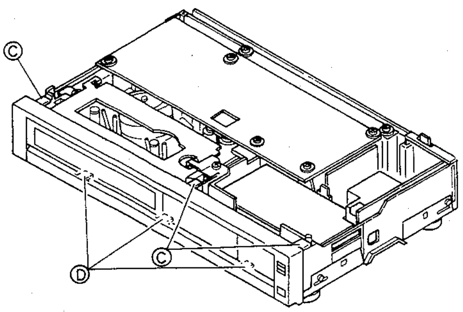


Fig. 1-1-2

1.1.3 Bottom cover

1. Remove the top cover.
2. Refer to Fig. 1-1-3 and take out 4 screws Ⓔ and 2 screws Ⓕ from the bottom of the chassis.
3. Disengage the bottom cover from 4 claws Ⓖ on the bottom of the chassis.

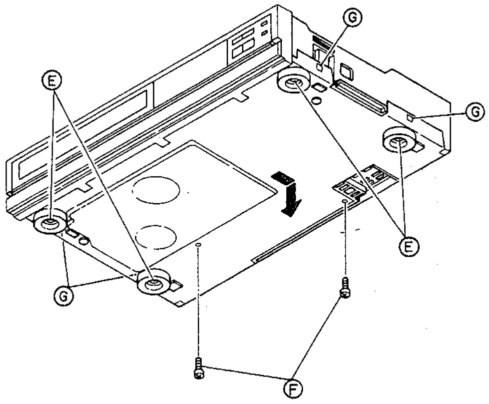


Fig. 1-1-3

1.1.4 Main board assembly

1. Remove the top cover.
2. Refer to Fig. 1-1-4 and take out 5 screws Ⓗ and 1 screw Ⓘ from main board assembly.

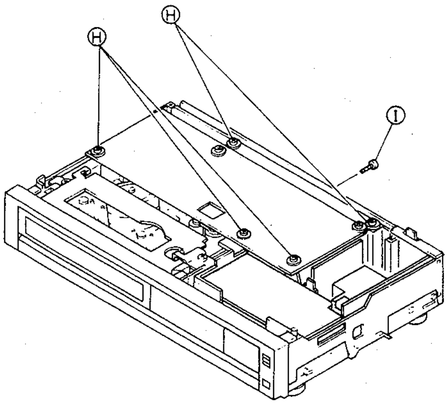


Fig. 1-1-4

1.1.5 Cassette housing

1. Remove the top cover and main board assembly.
2. Refer to Figs. 1-1-5 and 1-1-6.
   Take out 4 screws Ⓙ that secure the cassette housing. Disengage 3 tabs Ⓚ of the front panel and pull the front panel forward where it does not interfere with removing the cassette housing.
   Remove the cassette housing in the upward direction.

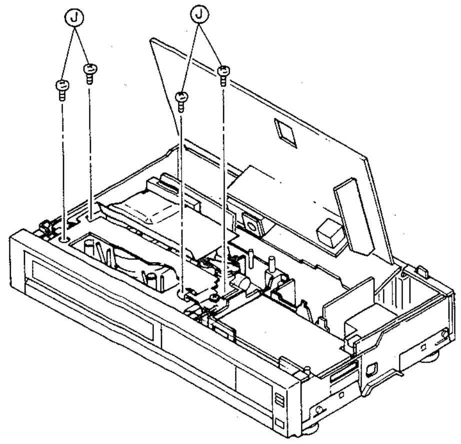


Fig. 1-1-5

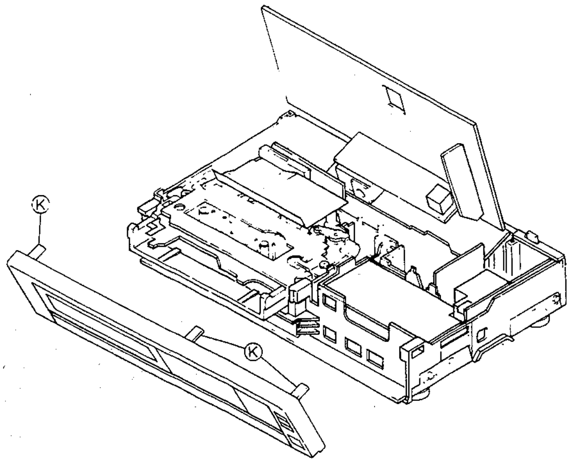


Fig. 1-1-6

1.1.6 Cassette housing installation

1. On the main deck, observe the positional relationships of the parts indicated in Fig. 1-1-7.
   If necessary, turn the loading motor by hand to obtain these positions.

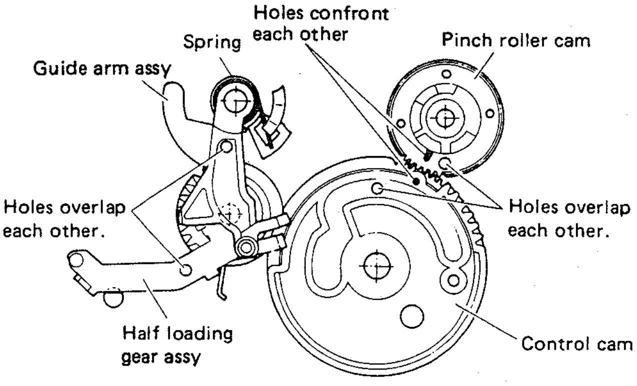

Holes confront each other
Spring
Pinch roller cam
Guide arm assy
Holes overlap each other.
Holes overlap each other.
Half loading gear assy
Control cam

Fig. 1-1-7

2. Refer to Fig. 1-1-8 and confirm that the clutch is engaged.
   If necessary, press the lever indicated by the arrow to where the clutch is locked.

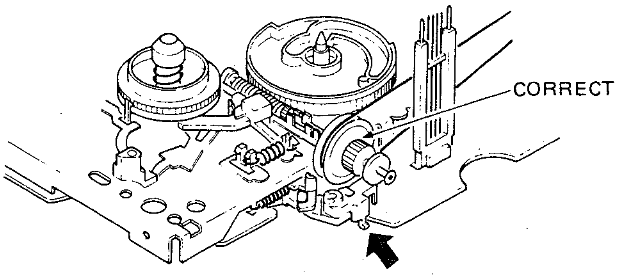


Fig. 1-1-8

3. Check that the cassette housing is in the eject state (internal holder of the cassette housing is locked in raised position).
   Set the cassette housing into place and secure with 4 screws.
4. Install the front panel as shown in Fig. 1-1-9 and re-engage the tabs. Supply power and use a spare cassette to check for normal loading and eject operations.

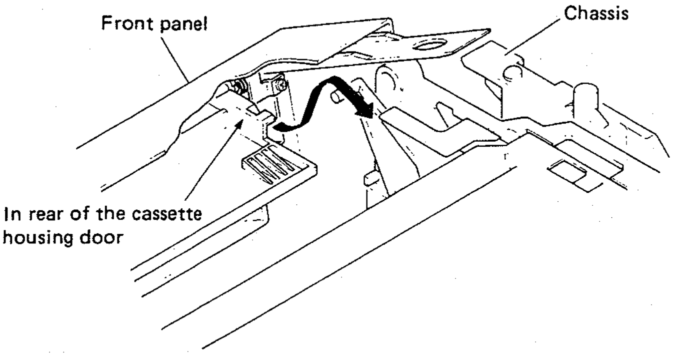

Front panel
Chassis
In rear of the cassette housing door

Fig. 1-1-9

5. Disconnect VCR from power, then reinstall the main board assembly and top cover.

1.1.7 Cassette housing door

1. Remove the top cover and front panel assembly.
2. Take out one screw Ⓛ of the front panel assembly.
3. Refer to Fig. 1-1-10 and use care regarding the torsion spring, then pull out the left end of the cassette housing door to move it.

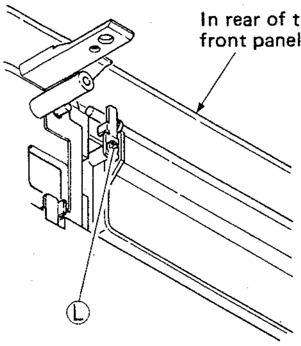


Fig. 1-1-10

1.1.8 Main-deck

1. Remove the top cover, front panel assembly and main board assembly.
2. Refer to Fig. 1-1-11 and take out 3 screws Ⓜ from the main-deck assembly.
3. Remove the main-deck assembly in the upward direction and disconnect a connector of CN601 from the Mechacon board, connectors of CN1, CN2 from the Pre/Rec board, connectors of CN1, CN2 from the A/C head board, a connector of CN1 from the Loading MDA board and a connector of CN1 from the Drum MDA board.

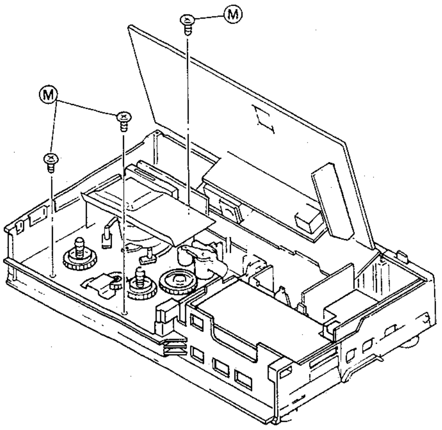


Fig. 1-1-11

1.2 MECHANISM ADJUSTMENTS

1.2.1 Precautions

1. Disconnect mainframe from AC power before soldering.
2. Avoid imparting stress to wires when disengaging connectors.
3. Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4. Use care not to damage tabs, claws, etc. during repairs.
5. Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6. When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.

1.2.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1. Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2. Connect pins 2 and 3 of MECHACON board connector CN601.
3. Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

1.2.3 Manually removing cassette tape

In event of electrical system failure that prevents the tape from being unloaded, the tape can be removed manually by the following procedure. Refer to Figs. 1-3-1, 1-3-2 and 1-3-3.

1. Disconnect power cord from AC outlet.
2. Turn the loading motor by hand so that the control cam rotates clockwise. This retracts the pole base assembly to the unloading position.
3. Continue turning to where the guide arm and half loading gear assemblies shift to beneath the cassette.
4. Turn the clutch assembly (capstan motot) at the rear of the deck to absorb slack tape within the cassette.
5. Again turn the loading motor in the same direction to raise the cassette and remove it.

1.2.4 Test equipment

The following special tools and fixtures are required for mechanism adjustment.

1. Alignment tape: MH-2
   Stairstep signal is employed for interchangeability checks and adjustments.
2. Torque gauge : PUJ48075-2
   Measures tape take-up torque.
3. Back tension cassette gauge : PUJ48076-2
   Measures tape tension at the supply side.
4. A/C head positioning tool : PUJ47351-2
   Shifts the head base for adjusting the control head position.
5. Roller driver : PTU94002
   Turns the guide roller for adjusting FM linearity.

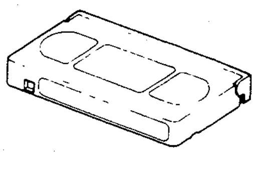
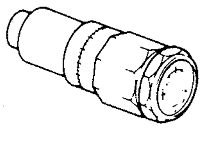
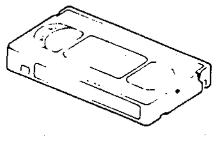
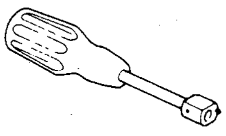
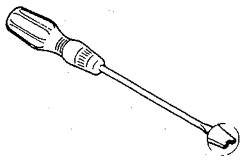
Alignment tapes 1	Torque gauge 2	Back tension cassette gauge 3	A/C head positioning tool 4	Roller driver 5
				

Fig. 1-2-4 Test equipment

1.3 MAIN MECHANISM PARTS

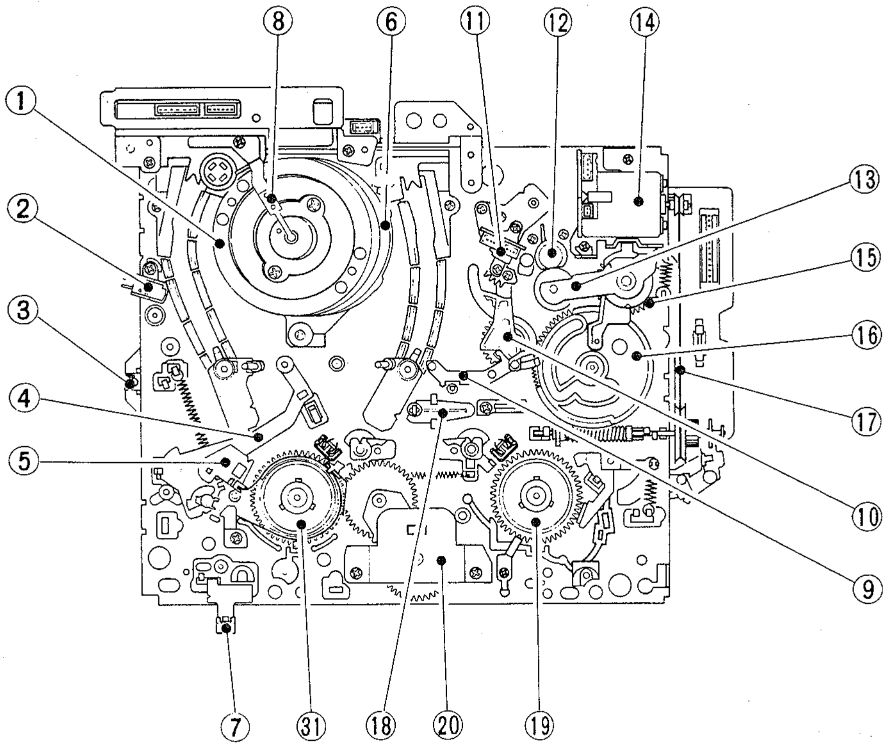

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Fig. 1-3-1 Top view of main-deck

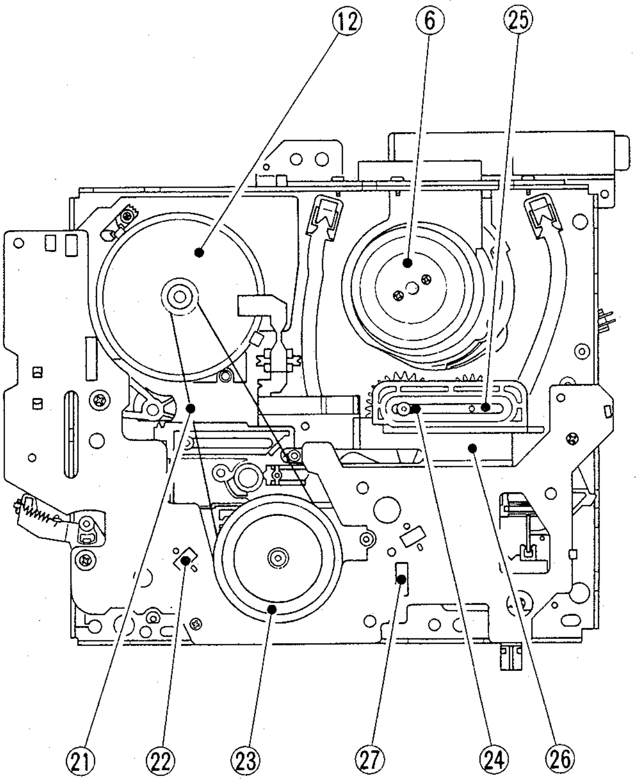


Fig. 1-3-2 Bottom view of main-deck

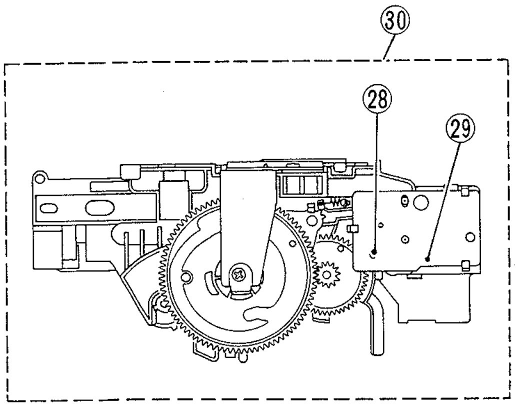


Fig. 1-3-3 Side view of cassette housing

A. Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

B. Lubrication

Oil and grease do not normally require periodic replenshing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).

For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.

Before oiling, clean with alcohol.
Apply one or two drops of oil. Avoid excess oil.

1. Table 1-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KANTO-G-31KAV

Table 1-1

2. Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: *Stir grease that has been stored for an extended period.*

C. Main mechanical parts

See Figs. 1-3-1, 1-3-2 and 1-3-3.

No.	Symbol	Parts Name	See Section
1	M32A	Upper drum assy	
2	M44	Full erase head	
3	51Q1	End sensor	
4	M41	Tension arm assy	1.5.4
5	M42	Tension band assy	1.5.4
6	M32C	Lower drum motor assy	1.5.2
7	M461	REC safety switch (S2)	
8	M32D	Brush assy	
9	M449	Half loading gear assy	1.5.5
10	M447	Guide arm assy	1.5.5
11	M48	A/C head	1.5.3
12	M422	Capstan motor	
13	M442	Pinch roller arm assy	
14	M434	Loading motor assy	
15	M446	Pinch roller cam	1.5.5
16	M438	Control cam	1.5.5
17	M437	Loading belt	
18	M460	LED holder (D1)	
19	M430	Reel disk (take-up)	
20	M424	Idler gear assy	
21	M429	Reel belt	
22	51PHS1	Take up reel sensor (PHS1)	
23	M426	Clutch assy	1.5.6
24	M433	Take up loading arm assy	1.5.7
25	M432	Supply loading arm assy	1.5.7
26	M439	Plate assy	1.5.7
27	M462	Slide switch (S3)	
28	56PHS3	Cassette sensor (PHS3)	
29	56Q2	Start sensor (Q2)	
30	M36	Cassette housing assy	
31	M470	Reel disk (supply)	

- Symbol interpretation example

M32A
M = Exploded view symbol
32A = Ref. No.

56 Q2
56 = Board No.
Q2 = Ref. No.

1.4 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced at when required.

1.4.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.

Also note that rubber parts may deform in time, even if the set is not used.

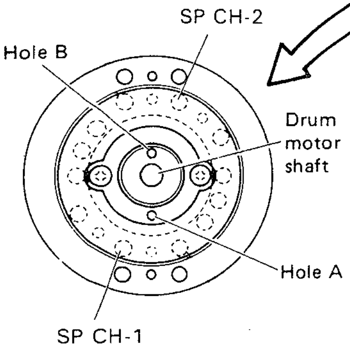
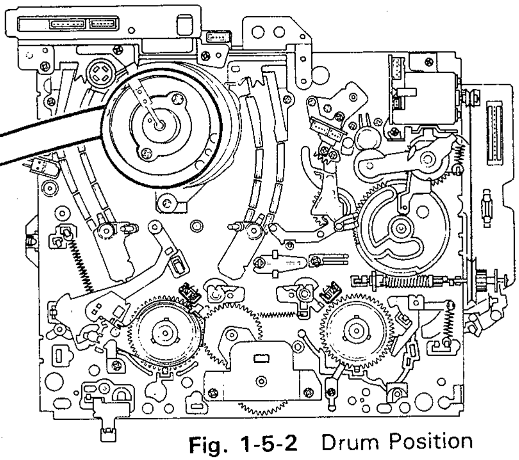
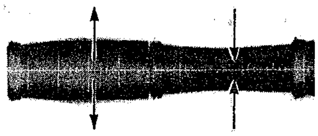
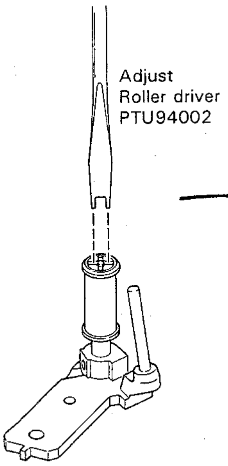
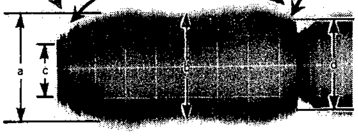
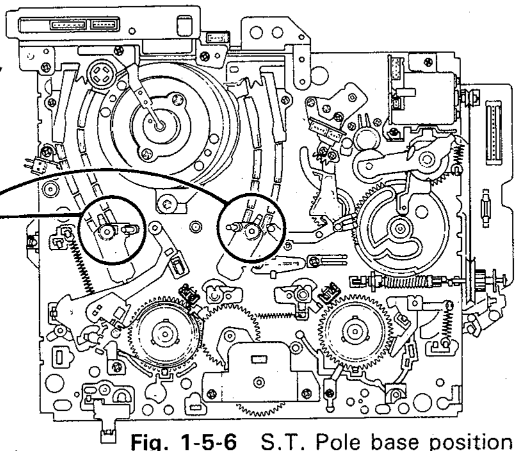
System	No.	Parts Name	Symbol No.	Periodic servicing schedule (operation hours)								
				250	500	750	1000	1250	1500	1750	2000	Overhaul
Tape Transport	1	Upper drum	M32A	★	★	☆	○	○	○	○	○	●
	11	A/C head	M48	★	★	★	○	○	○	○	○	●
	13	Pinch roller	M442	★	★	★	○	○	○	○	○	●
	2	Full erase head	M44	★	★	★	○	○	○	○	○	●
	4	Tension arm	M41									●
	6	Lower drum	M32C				○	○	○	○	○	●
	12	Capstan (shaft)	M422	★	★	★	★	★	★	★	★	●
	9	Half loading gear	M449									●
	10	Guide arm	M447									●
Drive	12	Capstan motor	M422				○	○	○	○	○	●
	17	Loading Belt	M437				○	○	○	○	○	●
	21	Reel Belt	M424				○	○	○	○	○	●
	19	Take-up reel disk	M430				○	○	○	○	○	●
	31	Supply reel disk	M470				○	○	○	○	○	●
	23	Clutch assy	M426								○	●
	14	Loading motor	M434				○	○	○	○	○	●
		Worm clutch assy	M436								△	●
	26	Plate assy	M439								△	●
Others	5	Tension band	M42				○				○	●
	8	Brush	M32D				○				○	●

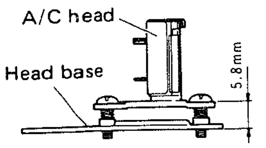
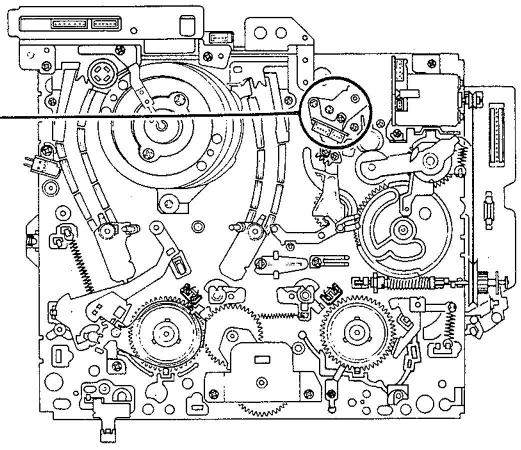
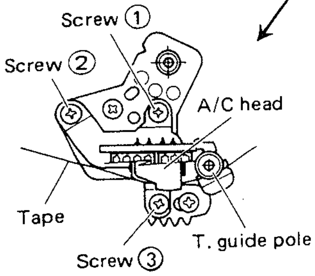
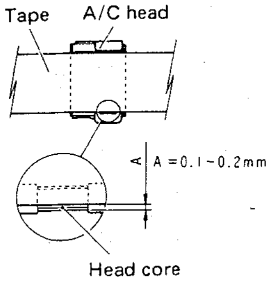
★ : Cleaning
☆ : Cleaning (or Replacement if necessary)
△ : Lubrication
No: Refer to Main mechanical parts

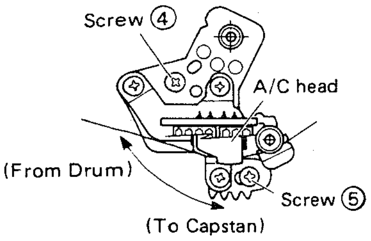
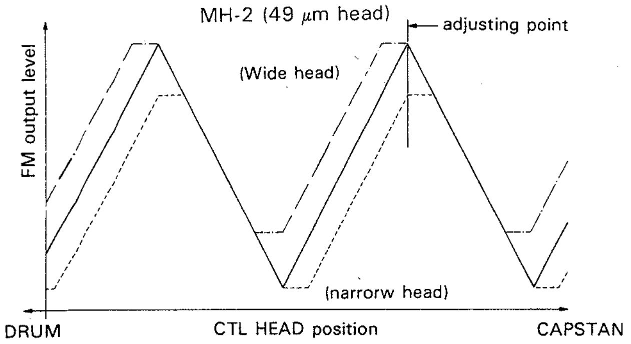
▲ : Lubrication (or Replacement if necessary)
● : Replacement
○ : Inspection or Replacement if necessary

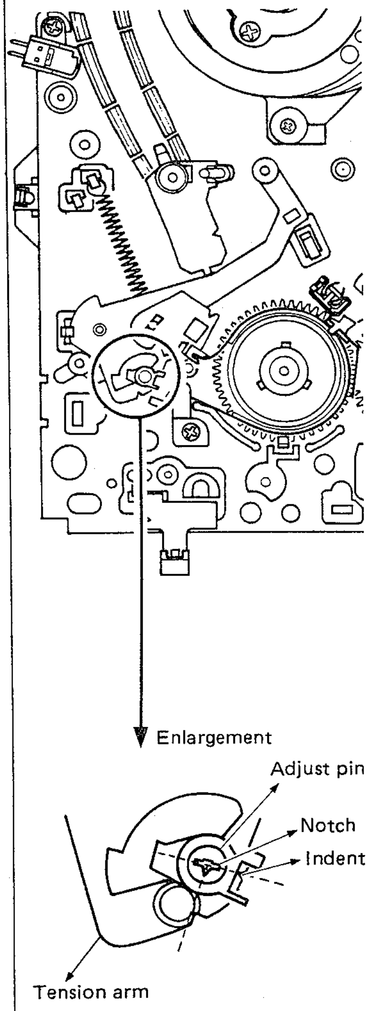
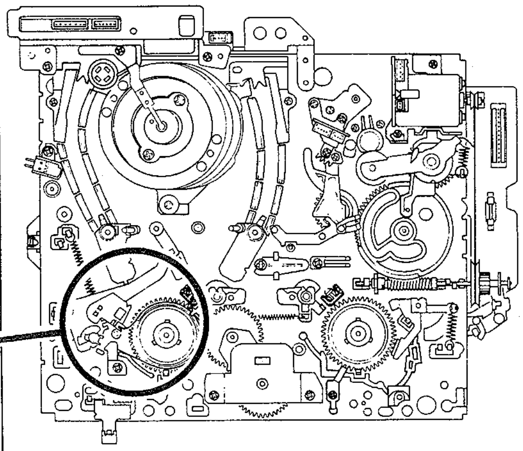
Table 1-4-1 *Approximate maintenance schedule*

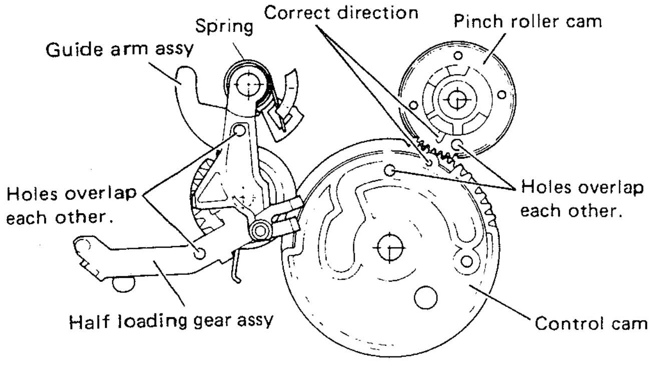
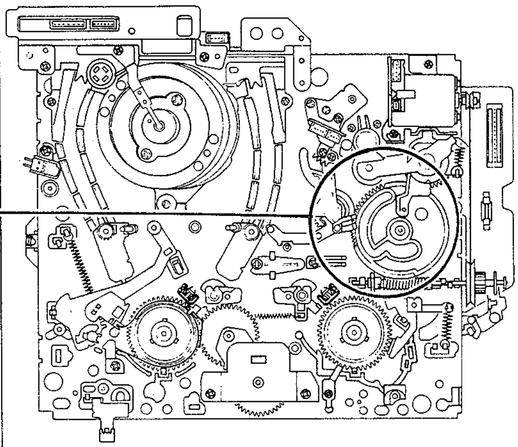
1.5 MAIN PARTS REMOVAL AND REPLACEMENT

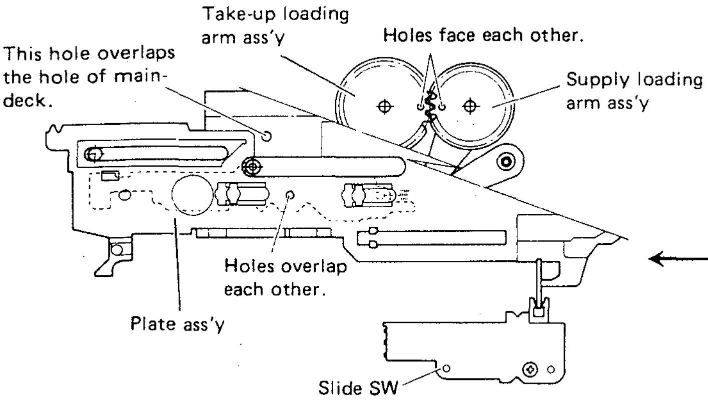
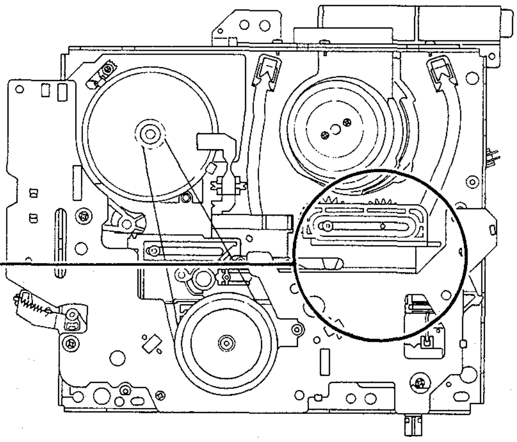
No.	Item	Checkpoints	Adjustment and Checks
1	Upper drum assembly •Symptoms: FM signal absent, intermittent or weak on one channel; large difference in channel output levels •Cause: Worn or damaged video heads, poor response, etc.  **Fig. 1-5-1** DRUM TOP VIEW	 **Fig. 1-5-2** Drum Position Mounting direction See Fig. 1-5-1. (Symptom: no picture)	After replacing, observe that upper drum hole A is opposite the motor axis from lower drum hole B.
		Axis wobble See Fig. 1-5-2. (Symptom: jitter, poor FM linearity) PB FM: Main board TP306 FF: Servo board TP411	Record and playback in SP mode. Confirm absence of large difference between channels. (Fig. 1-5-3)  **Fig. 1-5-3** Axis wobble
	 **Fig. 1-5-4** S.T. Pole base	FM linearity check See Fig. 1-5-5. (Symptom: vertical sync absent, picture noise) PB FM: Main board TP306 FF: Servo board TP411  **Fig. 1-5-5** FM linearity $\frac{b}{a} \geqq 0.7, \frac{c}{a} \geqq 0.65, \frac{d}{a} \geqq 0.65$	 **Fig. 1-5-6** S.T. Pole base position 1) Play stairstep signal of the MH-2 Alignment Tape. Confirm absence of obvious FM waveform loss and that operating the Tracking yields the optimum point. 2) Refer to Fig. 1-5-4, adjust for loss at the left edge (drum entry) of the FM waveform by turning the guide roller of the supply pole base. Similarly, adjust for loss at the right edge (drum exit) by turning the guide roller of the take-up pole base. **Note:** ***If FM loss occurs on both channels and cannot be corrected by adjusting the guide rollers, the lower drum needs replacement.***

No.	Item	Checkpoints	Adjustment and Checks
2	Lower drum assembly •Symptoms: Poor FM linearity, noisy rotation, jitter •Cause: Lead and bearing wear	Check FM linearity and switching point.	See above upper drum assembly items.
		Check control head phase (X value) Symptom: tracking error PB FM: Main board TP306 FF: Servo board TP411	1) Play stairstep signals of MH-2 Alignment Tape. Engage the Tracking Preset mode by pressing the + and – buttons simultaneously in the onscreen mode. Confirm that the same maximum FM waveform level is obtained as when the tracking is adjusted manually. 2) Refer to the A/C head adjustments.
3	A/C head  **Fig. 1-5-7** Temporary height	 **Fig. 1-5-9** A/C HEAD position	
	 Screw ① Screw ② A/C head Tape T. guide pole Screw ③ **Fig. 1-5-8** Inclination/Azimuth/ Height adj.	Temporarily set height as indicated in Fig. 1-5-7.	Set the height as indicated in Fig. 1-5-7 to facilitate tape transport checks and adjustments.
		Tilt (forward inclination) See Fig. 1-5-8. (Symptom: audio level varies greatly.)	1) Run tape, turn screw ① counterclockwise to where slight curling of the tape occurs at the lower flange of the take-up guide roller. 2) Then slowly turn the screw clockwise to where the curling ceases.
		Azimuth See Fig. 1-5-8. (Symptoms: audio low level or noisy) Audio output: Main board AUDIO OUT	1) Play stairstep signal (with audio 6 kHz) of the MH-2 Alignment Tape. Observe audio output signal with oscilloscope. 2) Turn screw ② and adjust for maximum audio output level.
	 **Fig. 1-5-10** Height Adj	Height See Figs. 1-5-8 and 1-5-10. (Symptom: low audio and control signal levels)	1) Run tape and observe the control head area. 2) Turn screws ①, ② and ③ by small and equal amounts until 0.1 to 0.2 mm of the head core bottom can be seen. Note: *If difficult to observe, play stairstep signal of MH-2 Alignment Tape and adjust for maximum audio output and control pulse level.*

No.	Item	Checkpoints	Adjustment and Checks
		FM linearity	Refer to upper drum assembly items. If adjustment is major, again check the azimuth.
	 Screw ④ A/C head (From Drum) Screw ⑤ (To Capstan) **Fig. 1-5-11** CTL head phase  **Fig. 1-5-12** CTL head phase **Note:** ***Trigger the oscilloscope externally signal from TP411 (DRUM FF). Use (+) trigger for MH-2 alignment tape.***	Control head phase See Fig. 1-5-11 PB FM: Main board TP306 FF: SERVO board TP411	1) Play stairstep signal of MH-2 Alignment Tape and observe the FM waveform. Set for Tracking Preset by pressing the + and − buttons simultaneously in the onscreen mode. 2) Loosen screws ④ and⑤. Set the A/C head positioning tool on screw ④, with the stud inserted into the nearby oblong hole. 3) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the drum and stop at the position of maximum FM waveform output level as shown in Fig. 1-5-12. 4) Tighten screw ⑤ . Remove the tool and tighten screw ④.
		EP auto tracking adjustment	1) Terminate the video output at 75 ohms with a monitor-TV and connect oscilloscope to PB FM (TP306). 2) Set MH-2L Alignment Tape into the cassette housing and play the stairstep signal. 3) Confirm that the A/V digital tracking LED changes from flashing to lighted. 4) Press button "D" of the preset unit (PTU 94008) to extinguish the A/V digital tracking LED. 5) Again press button "D" to enter the LP interchangeability adjust mode. Confirm that the A/V digital tracking LED changes from flashing to extinguished. Press the stop button. Note: ***If the Alignment Tape ejects automatically, repeat the control head phase adjustment.***

No.	Item	Checkpoints	Adjustment and Checks
4	Tension arm assembly Tension band assembly  **Fig. 1-5-13** Tension arm assy	Tension pole position See Fig. 1-5-13. (Symptom: poor FM waveform response)	 **Fig. 1-5-14** Tension arm position 1) Check that the cassette housing is in the eject state (internal holder of the cassette housing is locked in raised position). 2) Turn the eccentric adjust pin to align the notch of the pin with the tension arm indent as shown in Fig. 1-5-13.
		Back tension (Symptom: skew)	1) When the tension pole position is correctly adjusted, the back tension will assume the correct value. 2) Use the Back Tension Cassette Gauge and set for the playback mode. Confirm reading of 22 to 35. 3) Changing the tension pole position in order to vary the back tension will cause adverse effects elsewhere.

No.	Item	Checkpoints	Adjustment and Checks
5	Pinch roller cam Control cam Half loading gear assembly Guide arm assembly		Set mechanism to Eject mode internal holder of the cassette housing is locked in raised) position.
	 Correct direction Spring Guide arm assy Pinch roller cam Holes overlap each other. Holes overlap each other. Half loading gear assy Control cam Fig. 1-5-15 Control/Pinch roller cam		 Fig. 1-5-16 Control cam position
		Important: Do not remove or disturb parts other than those mentioned. See Fig. 1-5-15.	1) When installing the pinch roller cam, overlap the largest hole of the gear portion with the hole of the deck. 2) Set the control cam on the deck with the hole of the groove overlapped with the hole of the deck. Observe that the small hole of the control cam and the ridge of the pinch roller cam are aligned. (If the control cam does not fit readily, shift the rear plate assembly within the range of play.) 3) Install the half loading gear assembly with the hole overlapped with the hole of the deck. Secure with E-ring. 4) Install the guide assembly over the spring and with the hole overlapping that of the deck. Engage the spring correctly.
		Cassette housing assembly	Install the cassette housing assembly with the mechanism in the Eject mode. Also observe that the inner holder of the housing is raised and locked.
6	Clutch assembly	Take-up torque (Symptom: inadequate take-up torque)	1) Remove cassette housing and set for playback mode (see Section 1.2). 2) Set torque gauge on the take-up reel disk. Gradually relax your grip on the gauge and read the needle indication at the point the gauge begins to rotate with the disk. Confirm indication of 60 to 100.

No.	Item	Checkpoints	Adjustment and Checks
7	Take-up loading arm assembly Supply loading arm assembly Plate assembly		Note: • *Set mechanism to the Eject or Stop mode before removing these parts.* • *The flange of the plastic rivet securing the loading arm assembly and the pole base assembly can be damaged by attempting to remove it directly. Press the loading arm assembly firmly to prevent motion. Then use a narrow-shafted tool to press the rivet from the shaft end to remove it.*
		Mounting position alignment • Remove the tension arm assembly to facilitate operation. See Fig. 1-5-17.	1) Set the supply and take-up loading arm assemblies so that the holes of the gear portions are aligned, then secure to the pole base assemblies with rivets. 2) Shift the plate assembly and install with the holes of the upper and lower components overlapped.
		Slide switch See Fig. 1-5-17  Take-up loading arm ass'y This hole overlaps the hole of main-deck. Holes face each other. Supply loading arm ass'y Holes overlap each other. Plate ass'y Slide SW Fig. 1-5-17	Be sure to engage the slide switch slider with the edge of the plate assembly.  Fig. 1-5-18 T.S. Loading arm position

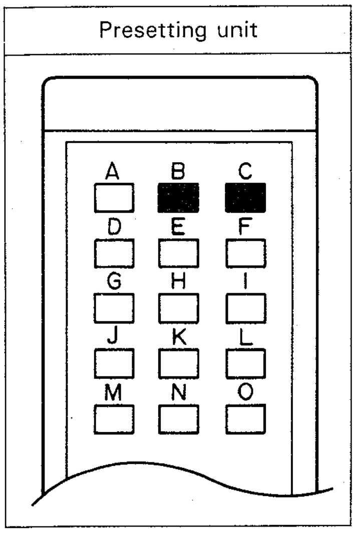
SECTION 2
ELECTRICAL ADJUSTMENTS

2.1 PREPARATION

Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

2.1.1 Required test equipment

1. Colour television or monitor
2. Oscilloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Audio oscillator
5. Audio voltmeter
6. Digital voltmeter
7. Signal generator: RF/IF sweep/marker
8. Signal generator: PAL/NTSC color bar, stairstep, video sweeper
9. Signal generator: Audio multiplex TV signal generator
10. Recording tape
11. Alignment tape: MH-2, MH-1
12. Presetting unit


Presetting unit
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

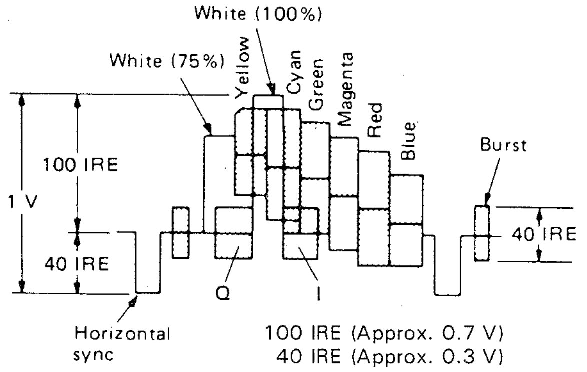

White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst
100 IRE
1 V
40 IRE
40 IRE
Q
I
Horizontal sync
100 IRE (Approx. 0.7 V)
40 IRE (Approx. 0.3 V)

Fig. 2-1-1 NTSC Colour bar signal of pattern generator

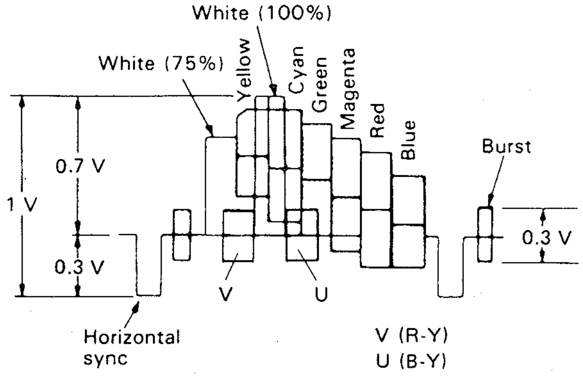

White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst
0.7 V
1 V
0.3 V
0.3 V
V
U
Horizontal sync
V (R-Y)
U (B-Y)

Fig. 2-1-2 PAL Colour bar signal of waveform

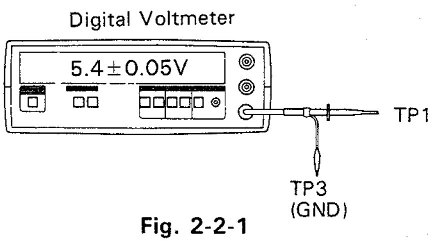
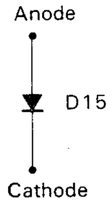
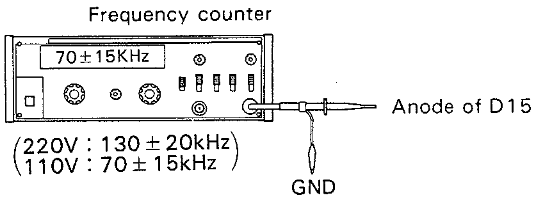
2.1.2 Check and adjustment steps

The check and adjustment steps are provided in the following in the form of charts. For clarity, the nomenclature used in the charts is outlined below.

No.	Checks and adjustments are numbered in the recommended sequence in which they are to be performed.
Item	Name assigned to the particular check and adjustment step.
Check Point	Location to which measuring instrument (oscilloscope unless otherwise noted) is to be connected.
Adjustment Parts	Variable component (resistor, capacitor, etc.) to be adjusted in this step. Dash (–) indicates check only.
Signal & Mode	• Input signal required to perform adjustment. Dash (–) indicates that special signal is not required. • Equipment operating mode at time of check or adjustment.
Colour bars	Colour bars signal as video input.
Stairstep	Stairstep signal as video input.
1 kHz	1 kHz sinewave as audio input signal.
MH-2 colour bars	Colour bars segment of MH-2 alignment tape.
MH-2 stairstep	Stairstep segment of MH-2 alignment tape.
MH-2 1 kHz	1 kHz audio signal segment of MH-2 alignment tape.
MH-2 RF sweep	RF sweep segment of MH-2 alignment tape.
E-E	Power on and machine in Stop mode.
REC	Recording mode
PB	Playback mode
SEARCH	Search (FWDS and REVS) playback mode
SLOW	Slow motion playback mode
STILL	Pause during playback mode
SP mode	SP recording speed
Description	This column provides an explanation of the step, notes and adjustment values, and reference to waveforms where applicable.

2.2 SWITCHING REGULATOR CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the SWITCHING REGULATOR board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	5V DC OUTPUT	TP1 (INPUT) TP3 (GND)	R37 (SWD 5 V ADJ)	• Tuner mode • REC • SP mode	1) Set recording video cassette into the cassette housing and set for the REC mode. 2) Connect a digital voltmeter as shown in Fig. 2-2-1. 3) Adjust R37 for 5.4±0.05V  Digital Voltmeter 5.4±0.05V TP1 TP3 (GND) **Fig. 2-2-1**
2	Confirmation of oscillation	Anode of D15  Anode D15 Cathode		• Tuner mode • REC • SP mode	1) Set recording video cassette into the cassette housing and set for the REC mode. 2) Connect a frequency counter as shown in Fig. 2-2-2.  Frequency counter 70±15KHz Anode of D15 (220V : 130±20kHz) (110V : 70±15kHz) GND **Fig. 2-2-2**

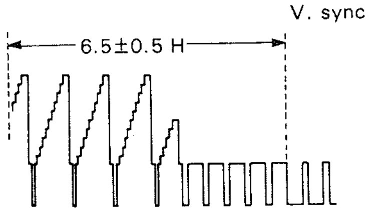
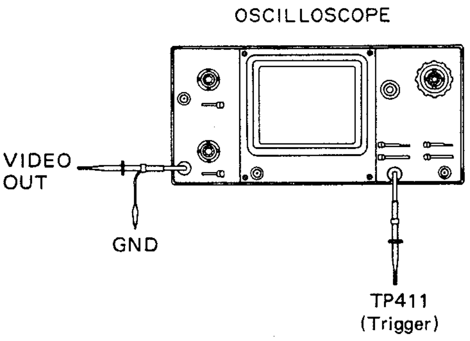
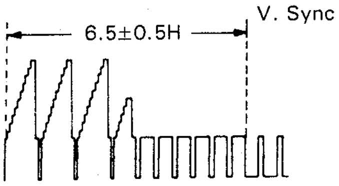
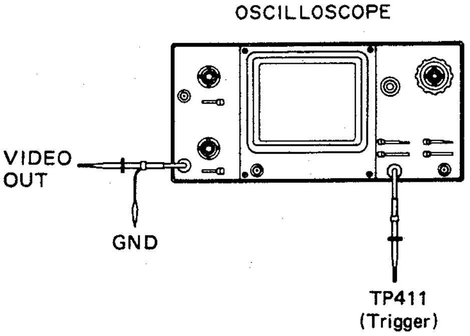
2.3 TIMER CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the TIMER board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Clock	IC1-16	C6 (clock)	•E-E	1) Disconnect VCR from AC. Connect a frequency counter between IC1-16 and GND. 2) Short TP1 to GND, then short the leads of capacitor C3 once in order to reset IC1. 3) Connect VCR to AC. All FDP segments and power LED are on. 4) Adjust C6 for 2048.000±0.002 Hz (488.2808 to 488.2818 μs).

2.4 SERVO CIRCUIT

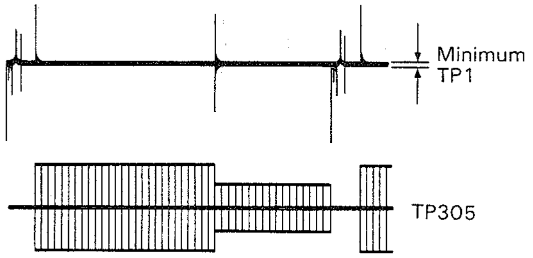
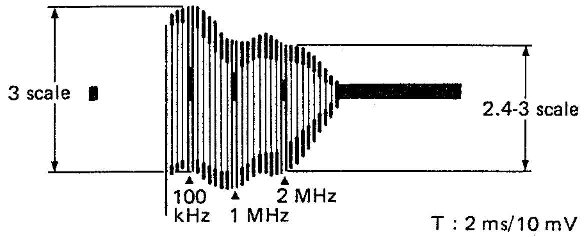
Notes: *Unless otherwise specified, all test points and adjustments are located on the SERVO board.*

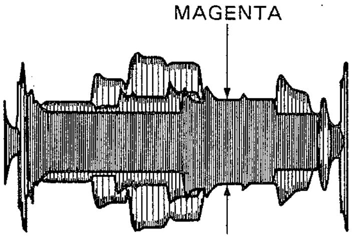
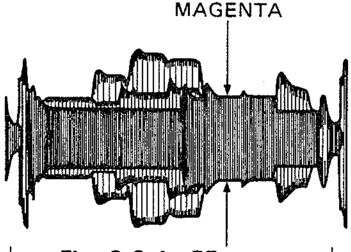
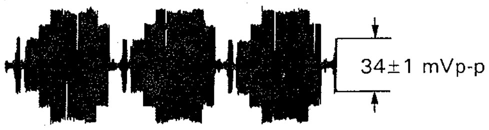
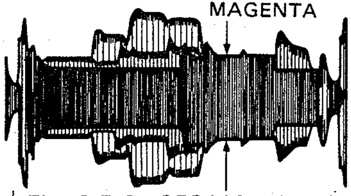
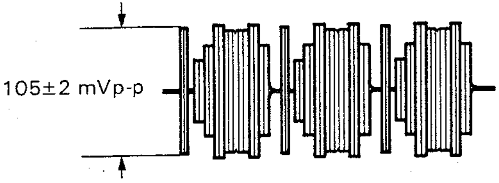
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	SP PB switching point	TP310 (VIDEO OUT) (MAIN BOARD)  V. sync 6.5±0.5 H	R421 (P/S SW POINT)	•PB (PAL) •MH-2 (stairstep) •Trigger slope (–) •SP mode •AUTO TRACKING OFF	1) Connect an oscilloscope to VIDEO OUT or TP310. 2) Play back the stairstep segment of MH-2 alignment tape. 3) Trigger the oscilloscope externally (– slope) with the signal from TP411 of the SERVO BOARD. 4) Adjust R421 to position the trigger point 6.5 ± 0.5H from V. sync.  OSCILLOSCOPE VIDEO OUT GND TP411 (Trigger)
		TP310 (VIDEO OUT) (MAIN BOARD)  V. Sync 6.5±0.5H	R420 (NT SW POINT)	•PB (NTSC) •MH-1 (stairstep) •Trigger slope (–) •SP mode •AUTO TRACKING OFF	1) Connect an oscilloscope to VIDEO OUT or TP310. 2) Play back the stairstep segment of MH-1 alignment tape. 3) Trigger the oscilloscope externally (– slope) with the signal from TP411 of the SERVO BOARD. 4) Adjust R420 to position the trigger point 6.5 ±0.5 H from V. sync.  OSCILLOSCOPE VIDEO OUT GND TP411 (Trigger)

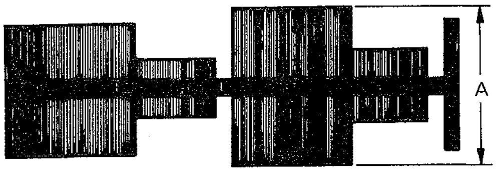
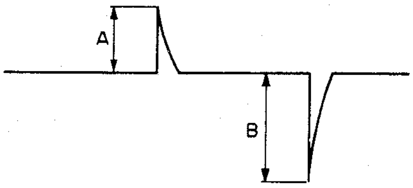
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
2	PAL mode SP slow tracking preset	Monitor-TV	Presetting unit (PTU94008)	•SP mode •Slow PB •PAL mode	Note: *Set VCR to A mode by remote controller.* 1) Set recording video cassette into the cassette housing. 2) Receive a color broadcast on a VHF-HI channel or supply a color bar signal to VIDEO IN. 3) Record a color broadcast or color bar signal in the SP mode. 4) Play back recorded signal in the FWD slow mode and set the tracking control of the FRONT panel to the center position by simultaneously pressing the (+) and (−) tracking buttons. 5) Observe the display on a monitor-TV and adjust for optimum noise condition (best tracking) by depressing "B (−)" or "C (+)" buttons of presetting unit as required. 6) Depress the stop button on the FRONT panel. 7) Confirm that the bar noise is not visible on the monitor in the slow mode.
3	PAL mode LP slow tracking preset	Monitor-TV	Presetting unit (PTU94008)	•LP mode •Slow PB •PAL mode	1) In the same manner as the above SP slow mode.
4	NTSC mode SP slow tracking preset	Monitor-TV	Presetting unit (PTU94008)	•SP mode •Slow PB •NTSC mode	Note: *Set VCR to A mode by remote controller.* 1) Set recording video cassette into the cassette housing. 2) Receive a color broadcast on a VHF-HI channel or supply a color bar signal to VIDEO IN. 3) Record a color broadcast or color bar signal in the SP mode. 4) Play back recorded signal in the FWD slow mode and set the tracking control of the FRONT panel to the center position by simultaneously pressing the (+) and (−) tracking buttons. 5) Observe the display on a monitor-TV and adjust for optimum noise condition (best tracking) by depressing "B (−)" or "C (+)" buttons of presetting unit as required. 6) Depress the stop button on the FRONT panel. 7) Confirm that the bar noise is not visible on the monitor in the slow mode.
5	NTSC mode EP slow tracking preset	Monitor-TV	Presetting unit (PTU94008)	•EP mode •Slow PB •NTSC mode	1) In the same manner as the above SP slow mode.

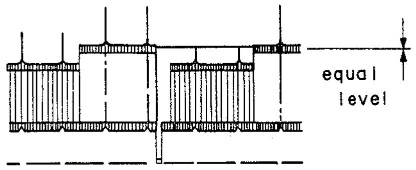
2.5 VIDEO CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the MAIN board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Noise cancel balance	TP1 (IC1-26) (Video unit board)	R27 (NC BAL) (Video unit board)	• REC • Input sel: AUX • PAL colour bar • SP mode	1) Supply a colour bar signal to VIDEO IN and connect an oscilloscope to TP1 (IC1-26 pin). 2) Set for the Rec mode. Adjust R27 for minimum DC step difference.  Fig. 2-5-1
			R21 (NC BAL) (Video unit board)	• REC • Input sel: AUX • NTSC colour bar • SP mode	1) Supply a colour bar signal to VIDEO IN and connect an oscilloscope to TP1 (IC1-26 pin). 2) Set for the Rec mode. Adjust R21 for minimum DC step difference.
2	SP PB Frequency  Fig. 2-5-2 PB frequency	VIDEO OUT (TP310)	R362 (SP PB EQ)	• REC then PB • CCIR video sweep • Auto tracking off • SP mode	1) Terminate VIDEO OUT with monitor - TV (75 Ω load), supply a video sweep signal without burst to VIDEO IN. 2) Set recording video cassette into the cassette housing. Record a video sweep signal without burst in the SP mode. 3) Connect an oscilloscope to VIDEO OUT. Play back recorded video sweep signal in the SP mode, set the tracking of the Front panel to the Auto tracking off position by simultaneously pressing the (+) and (−) tracking buttons. 4) Use the control of the oscilloscope to position the 100 kHz region at graduation 3 (0 dB) of the oscilloscope scale. 5) Adjust R362 to position the 2 MHz of channel 1 portion at 2.0 — 2.4 (−2 ± 1 dB) of the oscilloscope graduations as shown in Fig. 2-5-2. At this time, confirm that the channel difference is within 2 dB.
3	LP PB Frequency	VIDEO OUT (TP310)	R506 (LP PB EQ)	• REC then PB • Auto tracking off • CCIR video sweep • LP mode	1) In the same manner as above SP mode, perform adjustment for LP mode. 2) Record a video sweep without burst signal in the LP mode. 3) Play back recorded video sweep signal in the LP mode. Use the control of the oscilloscope to position the 100 kHz region at graduation 3 (0 dB) of the oscilloscope scale. 4) Adjust R506 to position the 2 MHz portion at 1.4 to 1.7 (−6±1 dB) of the oscilloscope graduations as shown in Fig. 2-5-2.
		Monitor	R362(SP) R506(LP)	• SP and LP modes • REC then PB • Philips pattern	**Alternate method:** 1) Record and play back a Philips pattern. 2) During playback, observe the picture and adjust R362 (SP mode) and R506 (LP mode) for the best resolution, whithout impaired S/N, at about 160 lines (2 MHz region). 3) So after this adjustment, confirm black or white spot.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
4	REC OUTPUT BELL	TP305	LC101 (Rec output bell)  **Fig. 2-3-3** REC output	•SECAM colour bar •EE	1) Supply a colour bar signal to VIDEO IN, connect an oscilloscope to TP305. 2) Use the controls of the oscilloscope to expand portion waveform of the TP305 as shown in Fig. 2-3-3. 3) Adjust LC101 for equal magenta colour levels of both horizontal signals. 4) Trigger the oscilloscope externally with signal from TP312 (CN1-11: SYNC). T: 10 μs/10 mV
5	PB OUTPUT BELL	TP308	LC102 (PB output bell)  **Fig. 2-3-4** PB output	•SECAM colour bar •PB	1) Supply a colour bar signal to VIDEO IN, connect an oscilloscope to TP308. 2) Record a colour bar signal in the SP mode, then play back recorded colour bar signal. 3) Use the controls of the oscilloscope to expand portion waveform of the TP308 as shown in Fig. 2-3-4. 4) Adjust LC102 for equal magenta colour levels of both horizontal signals. 5) Trigger the oscilloscope externally with signal from TP231 (CN1-11: SYNC). T : 10 μs/10 mV
6	REC colour level	TP305	R311 (PAL Rec colour level)  **Fig. 2-5-5** PAL colour bar	•SP REC •PAL colour bar	1) Supply a colour bar signal to VIDEO IN. Connect an oscilloscope to TP305. 2) Set recording video cassette into the cassette housing. Set for the REC mode. 3) Adjust R311 so that the burst level becomes 34 ± 1 mVp-p at TP305 as shown in Fig. 2-5-5.
			R324 (SECAM Rec colour level)  **Fig. 2-5-6** SECAM colour bar	•SP REC •SECAM colour bar	4) Change colour bar signal to SECAM and supply the colour bar signal to VIDEO IN. 5) Trigger the oscilloscope externally with signal from TP312 (SYNC). 6) Adjust R324 so that the magenta level becomes 47 ± 1 mVp-p at TP305 as shown in Fig. 2-5-6.
			R319 (NTSC Rec colour level)  **Fig. 2-5-7** NTSC colour bar	•SP REC •NTSC colour bar	7) Change colour bar signal to NTSC and supply the colour bar signal to VIDEO IN. 8) Adjust R319 so that the burst level becomes 105 ± 2 mVp-p at TP305 as shown in Fig. 2-5-7.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
7	REC then PB colour level	TP207	R327	• PB mode • MH-2 colour bar • SP mode	1) Connect an oscilloscope to TP207 and observe colour signal level. 2) Set the MH-2 alignment tape into the cassette housing, play back the colour bar segment of MH-2 alignment tape. 3) Set the tracking of the FRONT panel to the Auto tracking off position by simultaneously pressing the "+" and "−" tracking buttons. 4) Adjust by pressing the "+" and "−" tracking buttons of the Front panel for maximum level of the colour waveform and make a note of the higher colour level "A". 5) Press the STOP button on the FRONT panel and eject the MH-2 alignment tape.
	 Fig. 2-5-8 REC color level			• REC then PB • PAL colour bar • Auto tracking : OFF • SP mode	6) Set recording video cassette into the cassette housing. Supply a colour bar signal to VIDEO IN. 7) Trigger the oscilloscope externally with the signal from TP411 (DRUM FF) of the Servo board. Use (−) trigger for CH1 and (+) trigger for CH2. 8) Record a colour bar signal in the SP mode. 9) Play back recorded colour bar signal. Set the tracking of the FRONT panel to the Auto tracking off position by simultaneously pressing the "+" and "−" tracking buttons and confirm 85 ± 3% of the noted colour level at TP207. If necessary, before recording, adjust R327 so that the higher level channel becomes 85 ± 3% of the noted level "A" during playback as shown in Fig. 2-5-8. At this time, confirm that the channel level difference is within 5 dB. **Note:** ***Repeat the above step (9) several times.***
8	LP REC Colour Level and Balance	TP207	R504	• PB mode • MH-2L colour bar • REC then PB • PAL colour bar • LP mode • AUTO TRACKING OFF	1) Short between TP404 and GND of the servo board. 2) In the same manner as above (2.5.7), adjust R504 so that the higher level channel becomes 85±3% of the noted level during play back. At this time, confirm that the channel difference is within 4 dB.
9	Secam det	TP114	L104	• EE • SECAM colour bar	1) Connect an oscilloscope to TP114. 2) Adjust L104 so that A and B are related as follows: A : B = 3 : 3.8±0.2  Fig. 2-5-9
10	Mesecam det	TP214	L207	• EE • SECAM colour bar	1) Connect an oscilloscope to TP214. 2) Adjust L207 so that A and B are related as follows: A : B = 3 : 3.8±0.2 as shown in Fig. 2-5-9.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
11	Delayed colour level	TP308 TP316	R514	•PAL colour bar •SP •REC then PB	1) Connect one channel of a dual trace oscilloscope to TP308 and the other channel to TP316. 2) Adjust R514 so that TP308 and TP316 become the same colour level.
12	Delayed video level	TP310 (VIDEO OUT)	R9 (Inc. IC501)	•NTSC colour bar •SP •REC then PB ↓ STILL	1) Connect an oscilloscope to TP310 (VIDEO OUT). 2) Record a colour bar signal in the SP mode, then play back in the still mode. 3) Adjust R9 so that the Y level difference is uniform at VIDEO OUT as show in Fig. 2-5-10.  Fig. 2-5-10
13	0.5H Jump det.	TP331	R410	•E-E •No signal	1) Connect a frequency counter between TP331 and GND. 2) Short between TP332 and TP333. 3) Adjust R410 for 30.0±0.2 kHz.

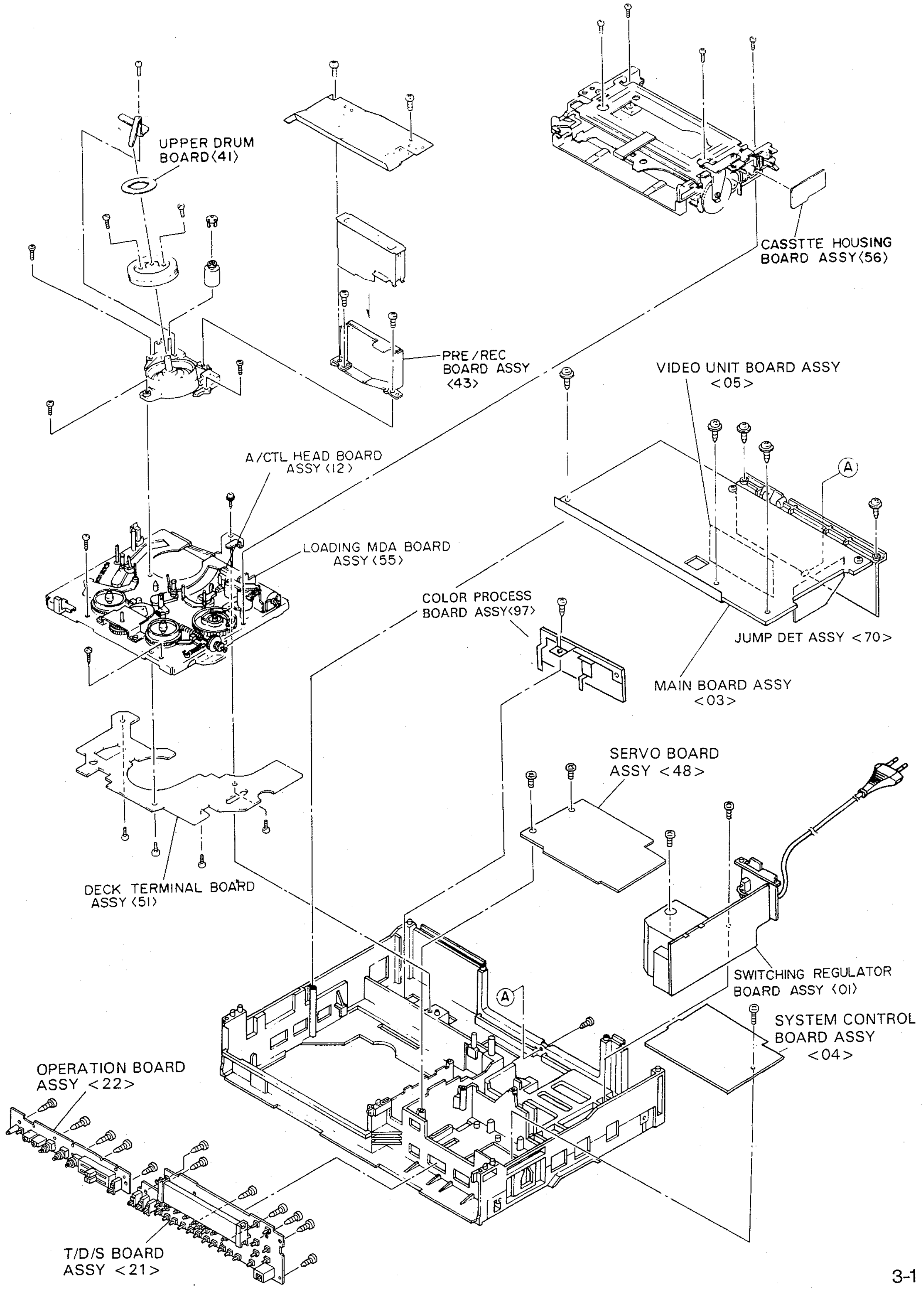
2.6 AUDIO CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the MAIN board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Audio Bias Level	TP31 (+) TP32 (−)	R42	•SOURCE Select: AUX •SP mode •REC mode •No signal	1) Connect a millivoltmeter between TP31 and TP32. 2) Set for the REC mode without incoming signal. 3) Adjust R42 for 1.9 mVrms.

SECTION 3
CHARTS AND DIAGRAMS

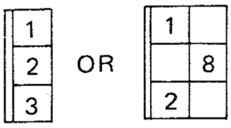
3.1 CIRCUIT BOARD LOCATIONS


UPPER DRUM BOARD⟨41⟩
PRE/REC BOARD ASSY ⟨43⟩
CASSTTE HOUSING BOARD ASSY⟨56⟩
VIDEO UNIT BOARD ASSY <05>
Ⓐ
A/CTL HEAD BOARD ASSY ⟨12⟩
LOADING MDA BOARD ASSY ⟨55⟩
COLOR PROCESS BOARD ASSY⟨97⟩
JUMP DET ASSY <70>
MAIN BOARD ASSY <03>
SERVO BOARD ASSY <48>
DECK TERMINAL BOARD ASSY ⟨51⟩
SWITCHING REGULATOR BOARD ASSY ⟨01⟩
Ⓐ
SYSTEM CONTROL BOARD ASSY <04>
OPERATION BOARD ASSY <22>
T/D/S BOARD ASSY <21>

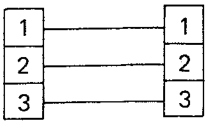
3.2 GENERAL INFORMATION

3.2.1 Connections

Note:
Unless otherwise specified, only signal input flow is indicated.
Connection arrows indicate only signal outputs.



: Connectors



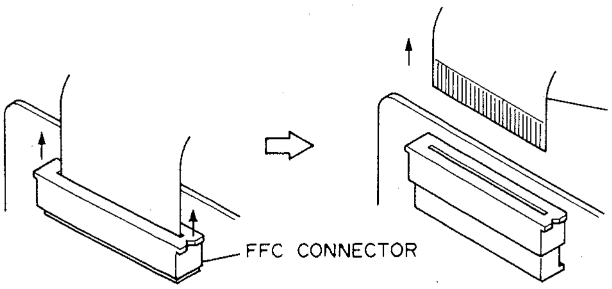
: Board in connectors

① ○
② OR ○ : Direct connections
③ ○

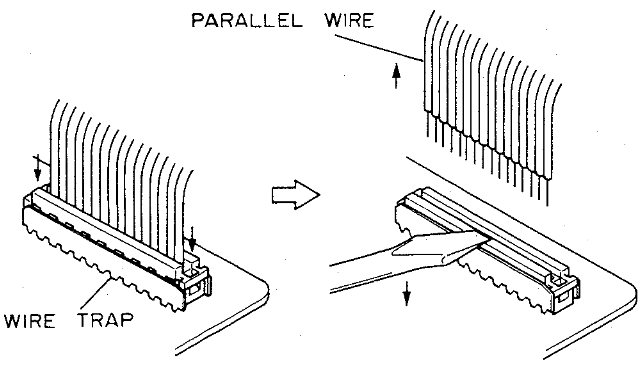
VS : Connected pattern in the board.
MS Abbreviations
SM V : Video M : Mechacon
S : Servo A : Audio
VS : Signal flow from video to servo.

3.2.2 Disconnecting the flatwire

1. Pull the connector structure upward to release the clamp when removing or inserting the flat wire cable.

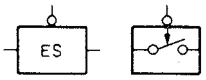


2. Depress the connector structure downward to release the clamp when removing or inserting the flat wire cable, as indicated below.

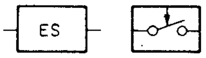


3.2.3 Indications

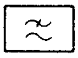
AUX : Active only at high.
$\overline{AUX}$: Active only at low.
$\bar{A}\bar{U}\bar{X}$: Active only at middle.
$\bar{A}U\bar{X}$: Active only at open.



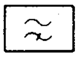
: Active only at low for electronic switch.



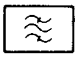
: Active only at high for electronic switch.



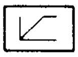
: Low pass filter.



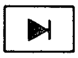
: High pass filter.



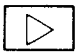
: Band pass filter.



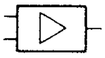
: Limiter.



: Detector



: Amplifier.



: Mixer stage.

3.2.4 Schematic diagram values

Unless otherwise specified.

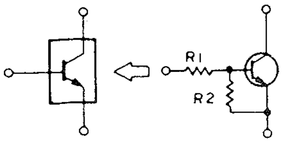
1. All resistance values are in ohms, 1/6 W or 1/8 W (refer to parts list).
2. All capacitance values are in μF, (P; PF).
3. All inductance values are in μH, (m; mH).
4. All diodes are 1SS133 or MA165, (refer to parts list).
5. Voltages are DC-measured (reference to ground) with a digital voltmeter during recording (SP mode) and playback (SP mode) with alignment tape. Where voltages differ between recording and playback, the voltage during playback is shown in parenthesis.
6. Waveforms (VIDEO System) are measured (reference to ground) with a color bar during recording (SP mode) and playback (SP mode) with alignment tape.
7. Waveforms (AUDIO System) are measured (reference to ground) with 1 kHz (−8 dBs) during recording and playback with alignment tape (1 kHz).
8. Shaded (   ) parts are critical for safety.
   Replace only with specified part numbers.

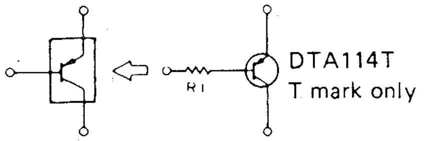
3.2.5 Signal flow in the schematic

➡ Recording signal path
⇨ Playback signal path
▭▶ REC/PB signal path

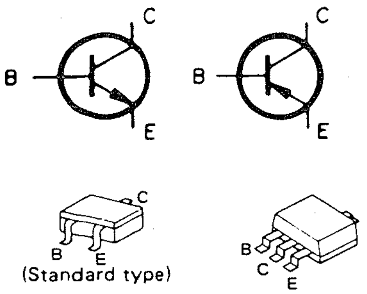
3.2.6 Semiconductors

1. Digital transistor

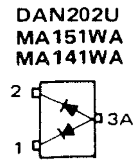


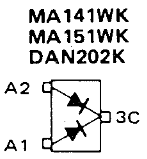

R1
DTA114T
T mark only

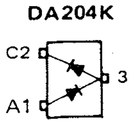
2. Chip transistor

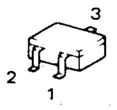

C
B
E
C
B
E
C
B
E
(Standard type)
B
C
E

3. Chip diode


DAN202U
MA151WA
MA141WA
2
1
3A


MA141WK
MA151WK
DAN202K
A2
A1
3C


DA204K
C2
A1
3



Note:
The digital transistor includes built in resistors.
It features small size and high reliability.
Both PNP and NPN types are available.

Uses:
Inverter, Interface, driver circuits.

3.2.7 Replacement of chip parts

For replacing chip parts, proceed as follows.
Use a well insulated fine-tipped soldering iron (approx. 17 W, 130°C ~ 260°C in temp.).
In addition, it is recommended to use a soldering iron (55 W approx.) with solder absorber for convenience.

Caution:
- Do not apply heat for more than 3 seconds.
- Do not rub electrodes.
- Do not reuse chips removed once. Discard them.
- Supplementary cementing is not required.

1. Soldered condition of chip parts

- Resistors, capacitors, etc.

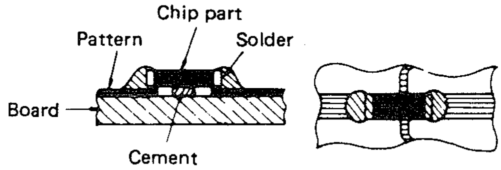

Chip part
Pattern
Solder
Board
Cement

Fig. 1-1 Soldering condition-1

- Transistors, diodes, etc.

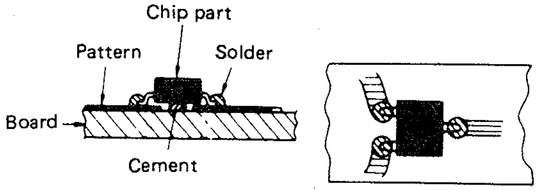

Chip part
Pattern
Solder
Board
Cement

Fig. 1-2 Soldering condition-2

2. How to remove chip parts

- Resistors, capacitors, etc.

1) Place a chip parts removal tool onto the chip part to hold it down.
2) Unsolder at each side of the chip part.

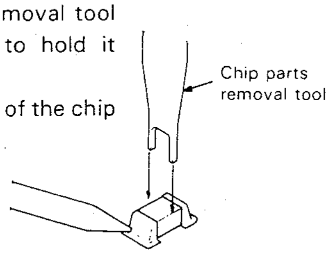

Chip parts removal tool

Fig. 2-1 R/C removal-1

3) Remove the chip part by twisting and sliding it.

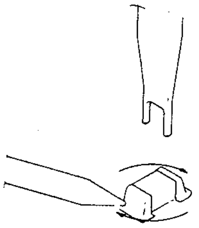


Fig. 2-2 R/C removal-2

3. How to remove transistors, diode.

1) Unsolder at the single lead side of the chip part.

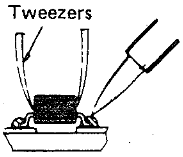


Fig. 3-1 Tr/Diode removal-1

2) Lift the unsoldered side upwards.

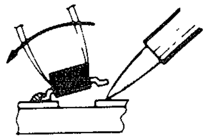


Fig. 3-2 Tr/Diode removal-2

3) Heat the other two leads simultaneously and remove the chip part upwards.

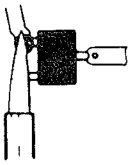


Fig. 3-3 Tr/Diode removal-3

4. Preheating and soldering

When placing new chip parts, especially capacitors, but not including transistors, preheat them with hot air (150°C approx.) by use of a blower type of hair dryer for about 2 minutes just before soldering. For soldering, use a soldering iron of 30 W approx.

5. How to place and solder chip parts

1) Presolder the contact points of the circuit pattern, to which the chip parts will be soldered.

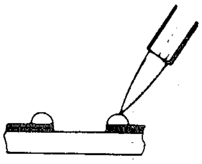


Fig. 5-1 Soldering-1

2) While holding down the chip part with the chip part removal tool, solder it with a soldering iron.

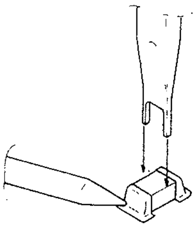


Fig. 5-2 Soldering-2

3.3 KEY TO ABBREVIATIONS

A	AC	: Alternating Current
	ACC	: Automatic Color Control
	ACCEL	: Acceleration
	A/CTL	: Audio/Control
	ADC	: Analog to Digital Converter
	ADD	: Adder
	ADRS	: Address
	ADJ	: Adjustment
	A DUB	: Audio Dubbing
	AE	: Audio Erase
	AEF	: Automatic Editing Function
	AFC	: Automatic Frequency Control
	AFT	: Automatic Fine Tuning
	AGC	: Automatic Gain Control
	AH	: Audio Head
	AL	: After Loading
	ALC	: Automatic Light Compensation Automatic Level Control
	AM	: Amplitude Modulation
	AMP	: Amplifier
	ANT	: Antenna
	APC	: Automatic Pedestal Control Automatic Phase Control
	APL	: Average Picture Level
	A/S/M	: Audio/Servo/Mechacon
	ASS'Y	: Assembly
	ATT	: Attenuator
	AUD	: Audio
	AUTO	: Automatic
	AUX	: Auxiliary

B	B	: Base
	BAL	: Balance
	BATT	: Battery
	BFP	: Burst Flag Pulse
	BIT	: Binary Digit
	BLK	: Black, Blanking
	BLU	: Blue
	BILING	: Bilingual
	BPF	: Bandpass Filter
	BRK	: Brake
	BRN	: Brown
	BT	: Band Tuning
	BUFF	: Buffer
	BW or B/W	: Black and White

C	C	: Capacitance, Collector, Color
	CAP	: Capstan, Capacitor
	CAR	: Carrier
	CARR	: Carrier
	CASS	: Cassette
	CCD	: Charge Coupled Device
	CCT	: Circuit
	CD	: Count Down
	CE	: Chip Enable
	CF	: Ceramic Filter
	CH	: Channel
	CHG	: Charge
	CHROMA	: Chrominance
	CLK	: Clock
	CLR	: Clear
	CMD	: Command
	CNT	: Count, Counter
	COL	: Color
	COM	: Common
	COMB	: Combination Comb Filter
	COMP	: Comparator Composite Compensation
	CONN	: Connector
	CONV	: Converter
	CP	: Circuit Protector Clamp Pulse
	CPC	: Capstan Phase Control
	CTL	: Control

D	D	: Drum, Digital, Diode, Drain
	DAC	: Digital to Analog Converter
	dB	: Decibel
	DC	: Direct Current
	DEC	: Decoder
	DEMOD	: Demodulator
	DEMUX	: Demultiplexer
	DET	: Detector
	DEV	: Deviation
	DIF	: Differential
	DISCR	: Discriminator
	DL	: Delay Line
	DOC	: Dropout Compensator
	DOD	: Drop Out Detector
	DPC	: Drum Phase Control

E	E	: Edit, Emitter
	EE	: Electric to Electric
	EF	: Emitter-Follower
	EMP	: Emphasis
	EN	: Enable
	ENC	: Encoder
	ENV	: Envelope
	EP	: Extended Play
	EQ	: Equalizer
	ES	: Electronic Switch
	ESNS	: End Sensor
	EXP	: Expander
	EXT	: External

F	F	: Farad, Fuse
	F ADV	: Frame Advance
	FDP	: Fluorescent Display Panel
	FE	: Full Erase
	FET	: Field Effect Transistor
	FF	: Fast Forward Flipflop
	FG	: Frequency Generator
	FM	: Frequency Modulation
	FMA	: FM Audio
	FR	: Full Recording, Frame, Fusible Resistor
	FREQ	: Frequency
	F-V CONV	: Frequency to Voltage Converter
	FWD	: Forward
	FWD S	: Forward Search

G	G	: Green, Gate, Grid
	GEN	: Generator
	GND	: Ground
	GRN	: Green
	GRY	: Gray

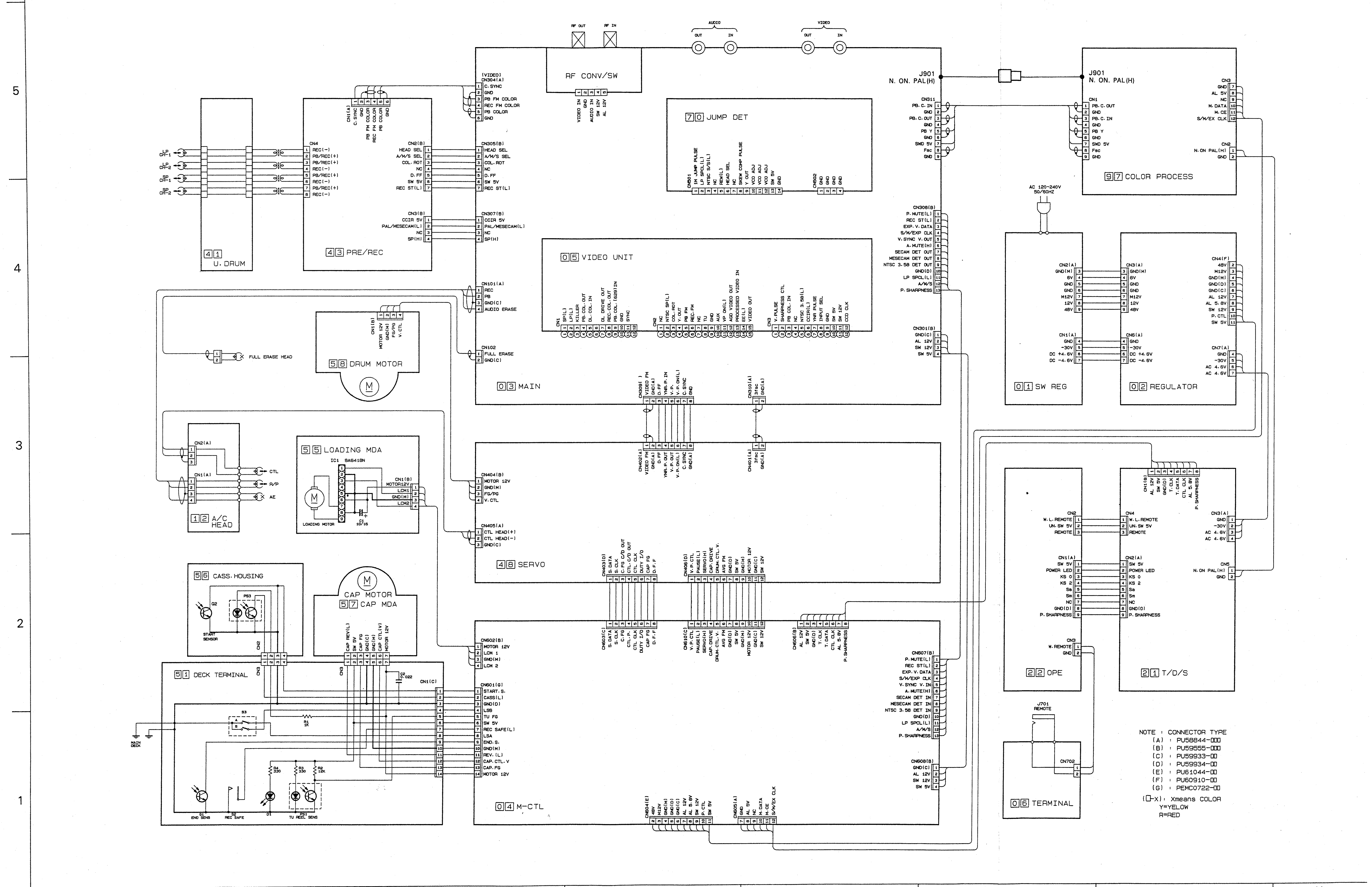
H	H	: High, Henry, Hour
	HG	: Hall Generator
	HPF	: Highpass Filter
	Hz	: Hertz

I	IC	: Integrated Circuit
	ID	: Identification (Pulse)
	IF	: Intermediate Frequency
	IFR	: Infrared
	IFT	: Intermediate Frequency Transformer
	IND	: Indicator
	INH	: Inhibit
	INS	: Insert
	INT	: Internal, Interrupt
	INV	: Inverter
	I/O	: Input/Output
	IR	: Infrared

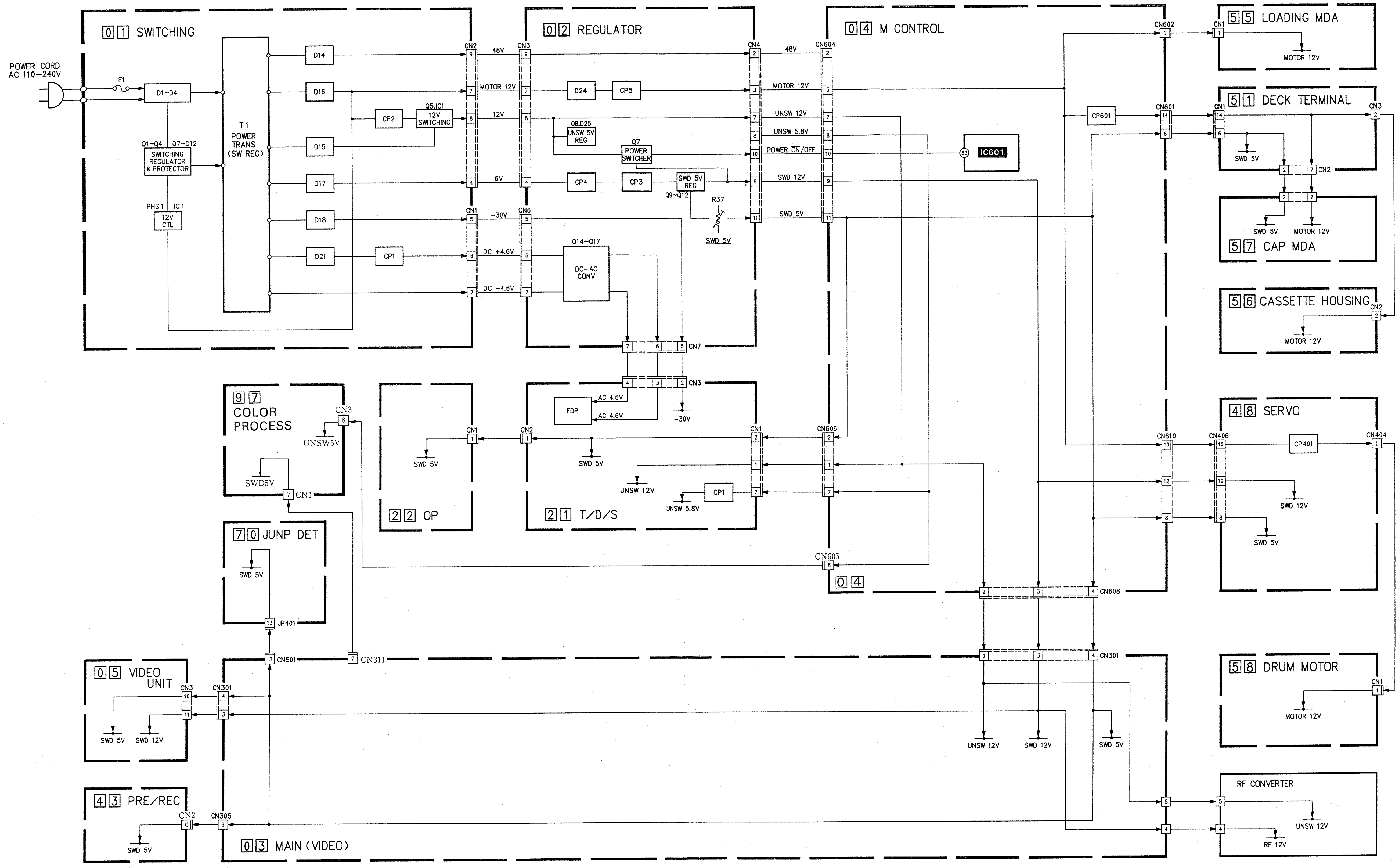
L	L	: Low, Left
	LIM	: Limiter
	LIN	: Linearity
	LOAD	: Loading (Cassette)
	LP	: Long Play
	LPF	: Lowpass Filter

M	M	: Motor, Mega
	MAX	: Maximum
	MDA	: Motor Drive Amplifier
	MECHACON	: Mechanism Control
	MI	: Multiintroduce
	MIC	: Microphone
	MIN	: Minimum
	MIX	: Mixer, Mixing
	MMV	: Monostable Multivibrator
	MOD	: Modulation, Modulator
	MODEM	: Modulator-Demodulator
	MON	: Monitor
	MPX	: Multiplexer, Multiplex
	MS	: Mode Select
N	NAND	: Not-And
	NC	: Not Connected, Normally Closed
	NFB	: Negative Feedback
	NLN	: Non-Linear
	NO	: Normally Open
	NOR	: Normal, Not-Or
	NR	: Noise Reduction
O	OP	: Operation
	OPAMP	: Operational Amplifier
	ORN	: Orange
	OSC	: Oscillator
P	PB	: Playback
	PC	: Photocoupler, Pulse Counter
	PCM	: Pulse Code Modulation
	PG	: Pulse Generator
	PGM	: Program
	PI	: Photo Interrupter
	PIF	: Picture Intermediate Frequency
	PLA	: Programmable Logic Array
	PLL	: Phase Locked Loop
	POS	: Position
	p-p	: Peak-to-Peak
	PREAMP	: Preamplifier
	P/S	: Pause/Still
	PSC	: Pulse Swallowing Control
	PU	: Pickup
	PUT	: Programmable Unijunction Transistor
	PWM	: Pulse Width Modulation
	PWR	: Power
Q	Q	: Quality Factor
R	R	: Red, Right
	RA	: Resistor Array
	RAE	: Random Access Enable
	RAM	: Random Access Memory
	REC	: Recording
	REF	: Reference
	REG	: Regulated, Regulator
	REM	: Remote
	REMOCON	: Remote Control (Unit)
	REV	: Reverse
	REV S	: Reverse Search
	REW	: Rewind
	R/P	: Record/Playback
	RPT	: Repeat
	RST	: Reset
	RT	: Rotary Transformer
	RUN	: Running
	RY	: Relay
S	SAW	: Sawtooth, Surface Acoustic Wave
	SC	: Subcarrier, Simulcast
	SCH	: Search
	SEL	: Select, Selector
	SENS	: Sensor
	SEP	: Separator
	SF	: Source Follower
	SFF	: Short Fast Forward
	SIF	: Sound Intermediate Frequency
	SHARP	: Sharpness
	SN	: Signal to Noise Ratio
	SOL	: Solenoid
	SP	: Standard Play
	SREV	: Search Reverse
	SREW	: Short Rewind
	S/S	: Slow/Still
	SSG	: Sync Signal Generator
	SSNS	: Start Sensor
	STD	: Strobe Data, Standard
	SUP	: Supply
	SW	: Switch
	SWD	: Switched
	SYNC	: Synchronization
T	TF	: Thermal Fuse
	TIM	: Timing
	TK	: Tracking
	TNR	: Tuner
	TP	: Test Point
	TPZD	: Trapezoid
	TR	: Transistor, Trimmer
	TRANS	: Transformer
	TU	: Take-up
U	UL	: Unloading
	UNREG	: Unregulated
	UNSW	: Unswitched
V	V	: Vertical, Volt
	VCO	: Voltage Controlled Oscillator
	VD	: Vertical Drive
	VIF	: Video Intermediate Frequency
	VLT	: Violet
	VR	: Variable Resistor
	VS	: Video and Sync
	V/T	: Video/Television
	V/U	: VHF/UHF
	VXO	: Variable Crystal Oscillator
W	W	: Watt
	W & D	: White and Dark
	WHT	: White
X	XTAL	: Crystal
Y	Y	: Luminance
	YEL	: Yellow

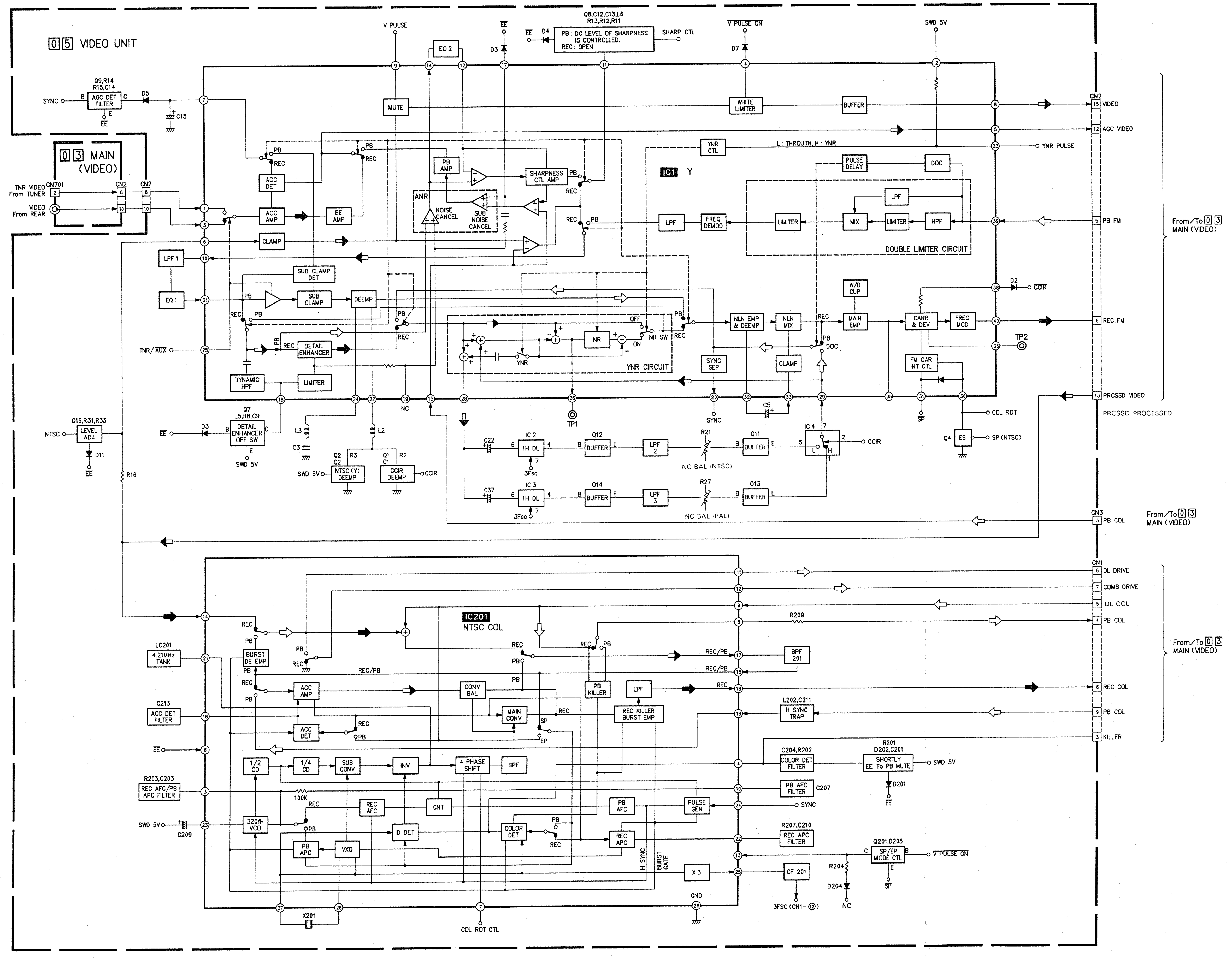
3.4 BOARD INTERCONNECTIONS


RF OUT
RF IN
AUDIO
OUT
IN
VIDEO
OUT
IN
RF CONV/SW
70 JUMP DET
J901
N. ON. PAL(H)
97 COLOR PROCESS
41 U. DRUM
43 PRE/REC
05 VIDEO UNIT
03 MAIN
58 DRUM MOTOR
FULL ERASE HEAD
12 A/C HEAD
CTL
R/P
AE
55 LOADING MDA
IC1 BA6410N
LOADING MOTOR
48 SERVO
56 CASS. HOUSING
START SENSOR
CAP MOTOR
57 CAP MDA
51 DECK TERMINAL
MAIN DECK
END SENS
REC SAFE
TU REEL SENS
04 M-CTL
AC 120-240V 50/60HZ
01 SW REG
02 REGULATOR
22 OPE
21 T/D/S
J701 REMOTE
06 TERMINAL
NOTE : CONNECTOR TYPE
(A) : PU58844-□□□
(B) : PU59555-□□□
(C) : PU59933-□□
(D) : PU59934-□□
(E) : PU61044-□□
(F) : PU60910-□□
(G) : PEMC0722-□□
(□-X): Xmeans COLOR
Y=YELLOW
R=RED
A
B
C
D
E
F
G
H
1
2
3
4
5
6

3.5 POWER SYSTEM BLOCK DIAGRAM

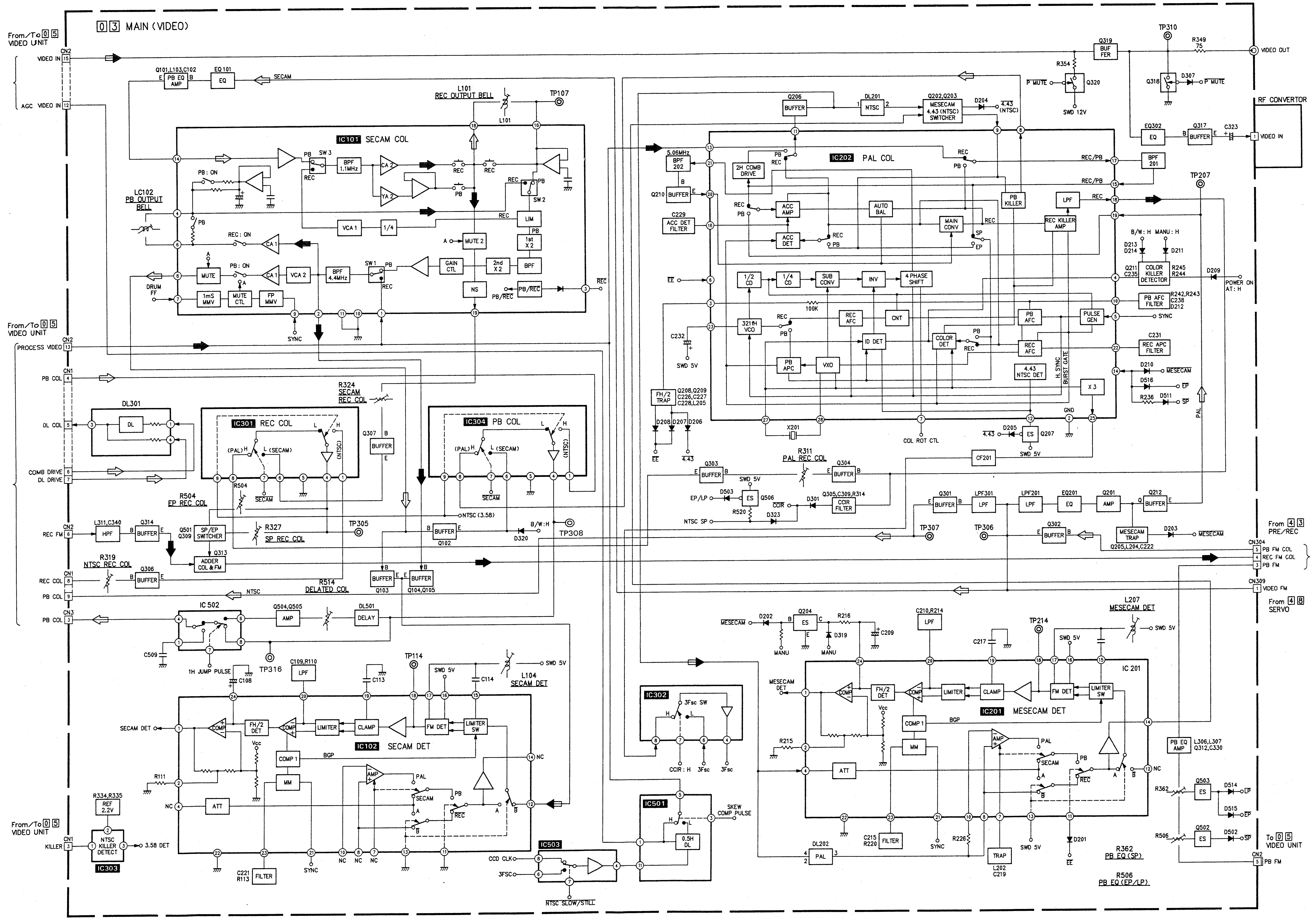

01 SWITCHING
POWER CORD
AC 110~240V
F1
D1~D4
Q1~Q4 D7~D12
SWITCHING REGULATOR & PROTECTOR
PHS1 IC1
12V CTL
T1 POWER TRANS (SW REG)
D14
D16
D15
D17
D18
D21
CP2
Q5,IC1 12V SWITCHING
CP1
CN2
CN1
48V
MOTOR 12V
12V
6V
-30V
DC +4.6V
DC -4.6V
02 REGULATOR
CN3
CN6
D24
CP5
Q8,D25 UNSW 5V REG
Q7 POWER SWITCHER
CP4
CP3
SWD 5V REG
Q9~Q12
R37
SWD 5V
Q14~Q17
DC-AC CONV
CN4
CN7
48V
MOTOR 12V
UNSW 12V
UNSW 5.8V
POWER ON/OFF
SWD 12V
SWD 5V
04 M CONTROL
CN604
CN602
CN601
CP601
IC601
33
CN606
CN605
CN608
CN610
04
55 LOADING MDA
CN1
MOTOR 12V
51 DECK TERMINAL
CN1
CN3
SWD 5V
CN2
57 CAP MDA
SWD 5V
MOTOR 12V
56 CASSETTE HOUSING
CN2
MOTOR 12V
48 SERVO
CN406
CP401
CN404
SWD 12V
SWD 5V
58 DRUM MOTOR
CN1
MOTOR 12V
RF CONVERTER
UNSW 12V
RF 12V
97 COLOR PROCESS
CN3
UNSW5V
SWD5V
CN1
22 OP
CN1
SWD 5V
21 T/D/S
CN2
CN3
FDP
AC 4.6V
AC 4.6V
-30V
SWD 5V
UNSW 12V
CP1
UNSW 5.8V
CN1
70 JUNP DET
SWD 5V
JP401
CN501
CN311
CN301
05 VIDEO UNIT
CN3
CN301
SWD 5V
SWD 12V
43 PRE/REC
CN2
CN305
SWD 5V
03 MAIN (VIDEO)
UNSW 12V
SWD 12V
SWD 5V

3.6 VIDEO UNIT BLOCK DIAGRAM



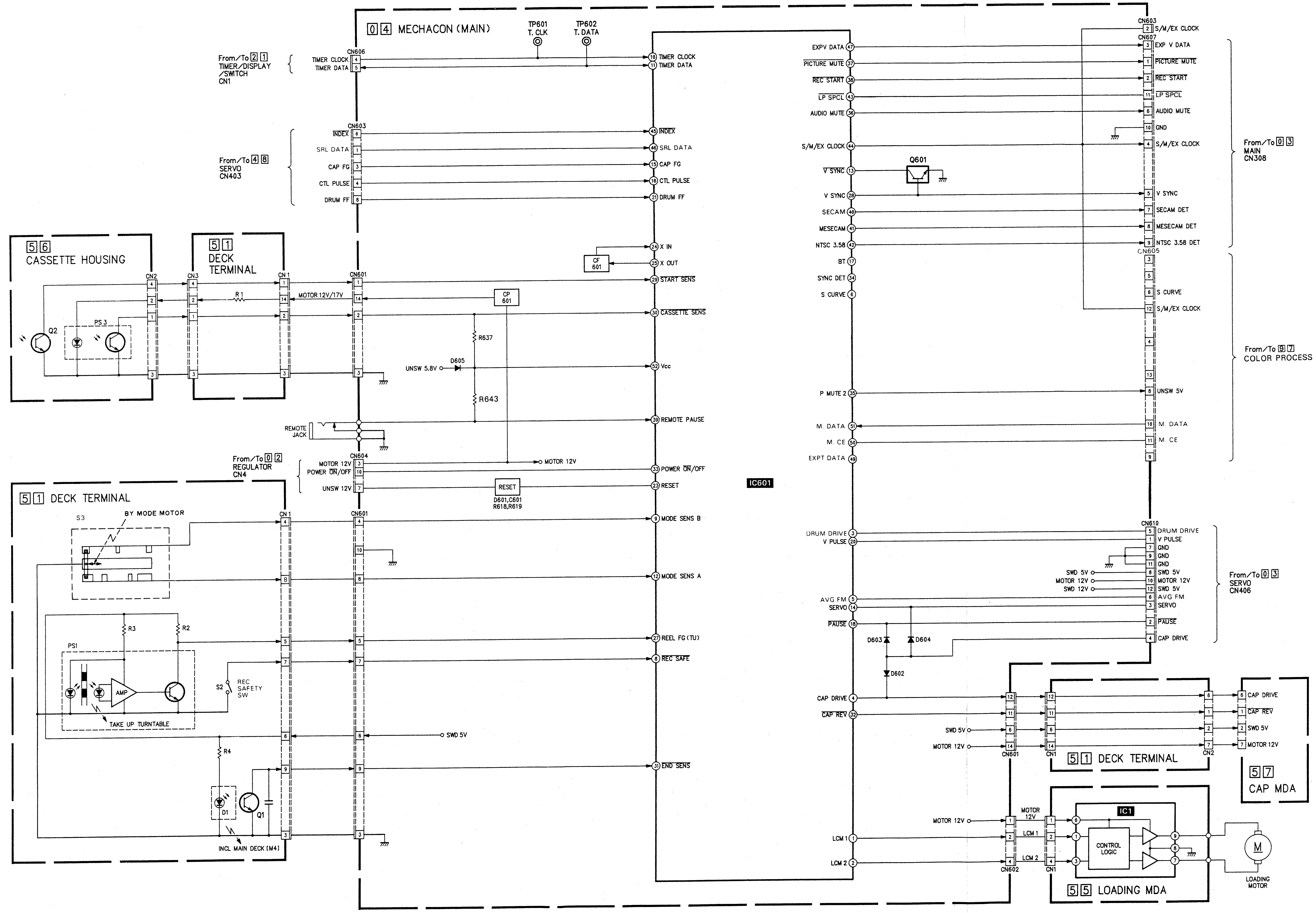
05 VIDEO UNIT
03 MAIN (VIDEO)
IC1 Y
IC201 NTSC COL
ANR
YNR CIRCUIT
DOUBLE LIMITER CIRCUIT
Q9,R14 R15,C14
AGC DET FILTER
SYNC
D5
C15
TNR VIDEO From TUNER
VIDEO From REAR
CN701
CN2
V PULSE
MUTE
EQ 2
EE
D3
D4
Q8,C12,C13,L6 R13,R12,R11
PB: DC LEVEL OF SHARPNESS IS CONTROLLED. REC: OPEN
SHARP CTL
V PULSE ON
D7
SWD 5V
WHITE LIMITER
BUFFER
VIDEO
AGC VIDEO
YNR PULSE
YNR CTL
L: THROUTH, H: YNR
PULSE DELAY
DOC
LPF
FREQ DEMOD
LIMITER
MIX
HPF
PB FM
From/To 03 MAIN (VIDEO)
ACC DET
ACC AMP
EE AMP
PB AMP
SHARPNESS CTL AMP
NOISE CANCEL
SUB NOISE CANCEL
CLAMP
LPF 1
SUB CLAMP DET
EQ 1
SUB CLAMP
DEEMP
TNR/AUX
DETAIL ENHANCER
DYNAMIC HPF
LIMITER
NLN EMP & DEEMP
NLN MIX
W/D CUP
MAIN EMP
CARR & DEV
FREQ MOD
D2
CCIR
REC FM
TP2
NR
NR SW
OFF
ON
YNR
SYNC SEP
FM CAR INT CTL
PRCSSD VIDEO
PRCSSD: PROCESSED
COL ROT
SP
TP1
C5
Q16,R31,R33
NTSC
LEVEL ADJ
D11
R16
Q7 L5,R8,C9
D3
DETAIL ENHANCER OFF SW
SWD 5V
L3
C3
L2
Q2 C2 R3
Q1 C1 R2
NTSC (Y) DEEMP
CCIR DEEMP
C22
IC 2
1H DL
3Fsc
Q12
LPF 2
R21
NC BAL (NTSC)
Q11
IC 4
CCIR
Q4
ES
SP (NTSC)
C37
IC 3
Q14
LPF 3
R27
NC BAL (PAL)
Q13
CN3
PB COL
CN1
DL DRIVE
COMB DRIVE
DL COL
R209
REC COL
KILLER
LC201 4.21MHz TANK
C213 ACC DET FILTER
R203,C203 REC AFC/PB APC FILTER
C209
BURST DE EMP
REC/PB
CONV BAL
MAIN CONV
PB KILLER
BPF 201
REC KILLER BURST EMP
L202,C211 H SYNC TRAP
1/2 CD
1/4 CD
SUB CONV
INV
4 PHASE SHIFT
BPF
C204,R202 COLOR DET FILTER
R201 D202,C201
SHORTLY EE To PB MUTE
D201
PB AFC FILTER
C207
320fH VCO
100K
REC AFC
CNT
PB AFC
PULSE GEN
ID DET
COLOR DET
REC APC
R207,C210 REC APC FILTER
Q201,D205
SP/EP MODE CTL
PB APC
VXO
H SYNC
BURST GATE
X 3
CF 201
R204
D204
3FSC (CN1-12)
NC
GND
X201
COL ROT CTL
EP
REC
PB

3.7 VIDEO BLOCK DIAGRAM



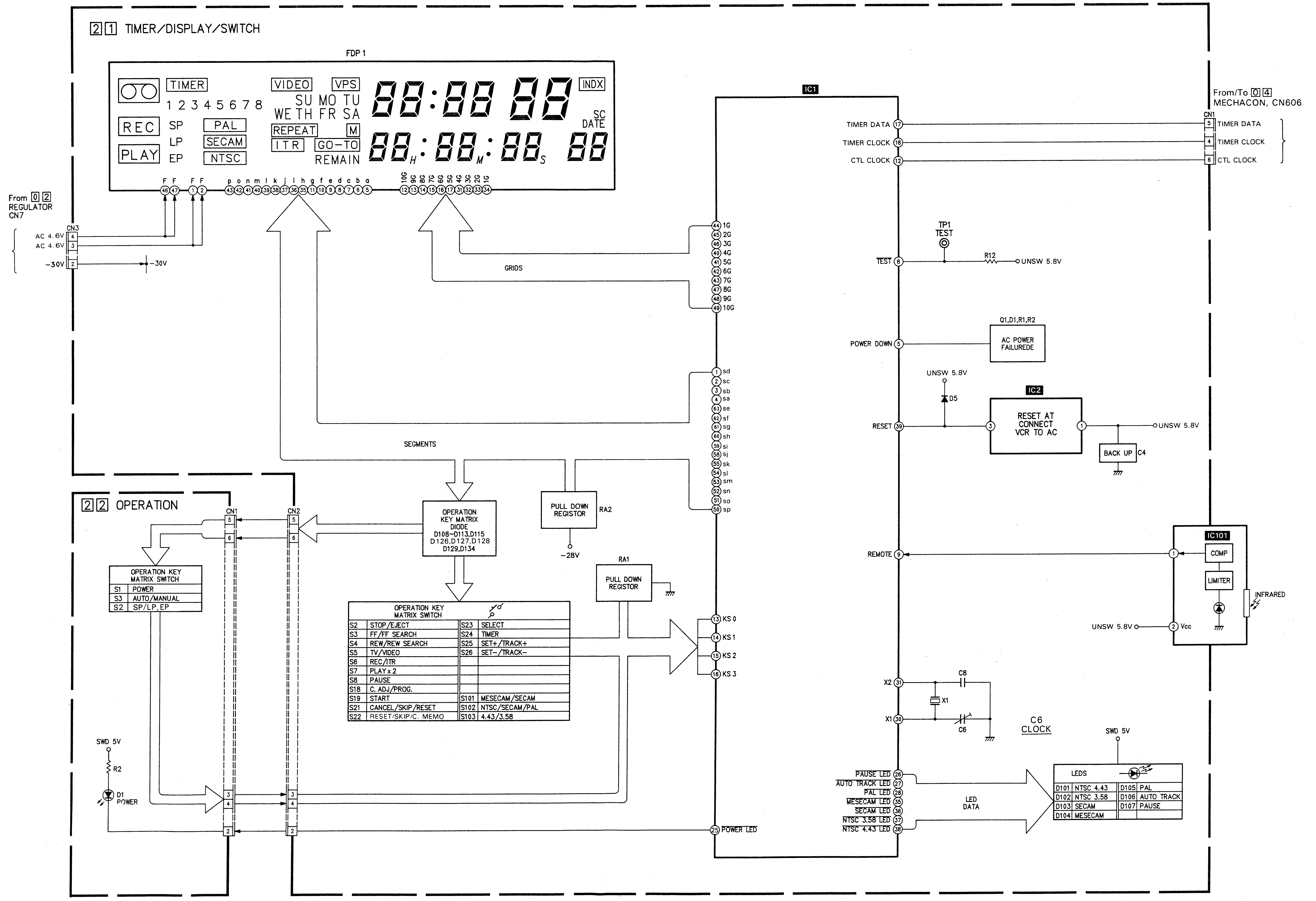
03 MAIN (VIDEO)
From/To 05 VIDEO UNIT
CN2
VIDEO IN 15
AGC VIDEO IN 12
Q101,L103,C102
PB EQ AMP
EQ101
EQ
SECAM
L101
REC OUTPUT BELL
TP107
IC101 SECAM COL
SW 3
BPF 1.1MHz
CA 2
YA 2
REC
PB
SW 2
LIM
1st X 2
2nd X 2
BPF
PB : ON
LC102
PB OUTPUT BELL
VCA 1
1/4
REC : ON
CA 1
MUTE 2
MUTE
VCA 2
BPF 4.4MHz
SW 1
GAIN CTL
NS
PB/REC
DRUM FF
1mS MMV
MUTE CTL
FP MMV
SYNC
From/To 05 VIDEO UNIT
PROCESS VIDEO 13
CN1
PB COL 4
DL301
DL
DL COL 5
COMB DRIVE 6
DL DRIVE 7
R324
SECAM REC COL
IC301 REC COL
(PAL) H
L (SECAM)
(NTSC)
R504
EP REC COL
Q307
BUFFER
IC304 PB COL
NTSC (3.58)
B/W : H
TP308
D320
Q102
REC FM 6
L311,C340
HPF
Q314
Q501 Q309
SP/EP SWITCHER
R327
SP REC COL
TP305
Q313
ADDER COL & FM
R319
NTSC REC COL
Q306
REC COL 8
PB COL 9
NTSC
R514
DELATED COL
Q103
Q104,Q105
CN3
PB COL 3
IC 502
Q504,Q505
AMP
DL501
DELAY
C509
1H JUMP PULSE
C108
TP316
C109,R110
LPF
C113
TP114
SWD 5V
C114
L104
SECAM DET
SECAM DET
COMP
FH/2 DET
LIMITER
CLAMP
FM DET
LIMITER SW
IC102 SECAM DET
R111
NC
ATT
COMP 1
BGP
MM
PAL
SECAM
R334,R335
REF 2.2V
From/To 05 VIDEO UNIT
KILLER
NTSC KILLER DETECT
3.58 DET
IC303
C221 R113
FILTER
Q319
BUF FER
R354
P MUTE
Q320
SWD 12V
TP310
R349 75
VIDEO OUT
Q318
D307
RF CONVERTOR
EQ302
EQ
Q317
BUFFER
C323
VIDEO IN
Q206
DL201
Q202,Q203
MESECAM 4.43 (NTSC) SWITCHER
D204
4.43 (NTSC)
5.06MHz BPF 202
IC202 PAL COL
2H COMB DRIVE
REC/PB
BPF 201
TP207
Q210
C229
ACC DET FILTER
ACC AMP
AUTO BAL
PB KILLER
LPF
REC KILLER AMP
MAIN CONV
ACC DET
SP
EP
B/W : H MANU : H
D213 D214
D211
Q211 C235
COLOR KILLER DETECTOR
R245 R244
D209
POWER ON AT : H
EE
1/2 CD
1/4 CD
SUB CONV
INV
4 PHASE SHIFT
PB AFC FILTER
R242,R243 C238 D212
100K
REC AFC
CNT
PB AFC
PULSE GEN
321fH VCO
C232
SWD 5V
ID DET
COLOR DET
REC AFC
C231
REC APC FILTER
PB APC
VXO
4.43 NTSC DET
H. SYNC
BURST GATE
D210
MESECAM
D516
R236 D511
X 3
FH/2 TRAP
Q208,Q209 C226,C227 C228,L205
GND
D208 D207 D206
X201
COL ROT CTL
D205
Q207
PAL
R311
PAL REC COL
Q303
Q304
SWD 5V
EP/LP
D503
ES
Q506
CCIR
D301
Q305,C309,R314
CCIR FILTER
R520
D323
NTSC SP
CF201
Q301
LPF301
LPF201
EQ201
Q201
Q212
TP307
TP306
Q302
MESECAM TRAP
Q205,L204,C222
D203
From 43 PRE/REC
CN304
PB FM COL
REC FM COL
PB FM
CN309
VIDEO FM
From 48 SERVO
L207
MESECAM DET
D202
Q204
R216
C209
C210,R214
MANU
D319
C217
TP214
IC 201
IC201 MESECAM DET
R215
PB EQ AMP
L306,L307 Q312,C330
R362
Q503
D514
D515
R506
Q502
D502
To 05 VIDEO UNIT
PB FM
DL202
C215 R220
R226
TRAP
L202 C219
D201
R362 PB EQ (SP)
R506 PB EQ (EP/LP)
IC302
3Fsc SW
CCIR : H
3Fsc
IC501
SKEW COMP PULSE
0.5H DL
IC503
CCD CLK
3FSC
NTSC SLOW/STILL

3.8 SYSTEM CONTROL BLOCK DIAGRAM

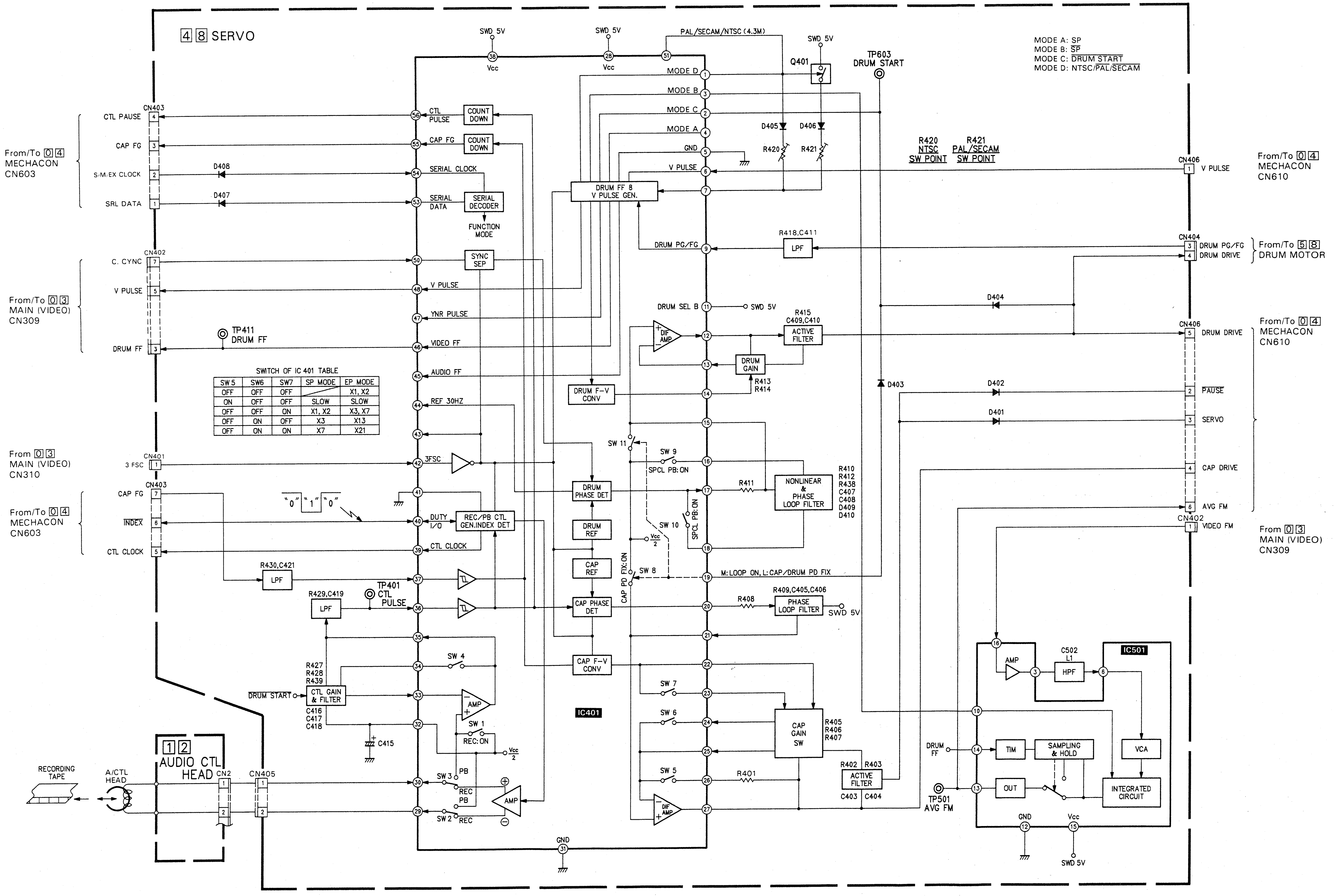


04 MECHACON (MAIN)
TP601 T. CLK
TP602 T. DATA
From/To 21 TIMER/DISPLAY /SWITCH CN1
CN606
TIMER CLOCK 4
TIMER DATA 5
From/To 48 SERVO CN403
CN603
INDEX 6
SRL DATA 1
CAP FG 3
CTL PULSE 4
DRUM FF 8
10 TIMER CLOCK
11 TIMER DATA
45 INDEX
46 SRL DATA
15 CAP FG
16 CTL PULSE
21 DRUM FF
56 CASSETTE HOUSING
Q2
PS 3
CN2
51 DECK TERMINAL
CN3
R 1
CN 1
MOTOR 12V/17V
CN601
CP 601
CF 601
24 X IN
25 X OUT
29 START SENS
30 CASSETTE SENS
R637
D605
UNSW 5.8V
52 Vcc
R643
39 REMOTE PAUSE
REMOTE JACK
From/To 02 REGULATOR CN4
CN604
MOTOR 12V 3
POWER ON/OFF 10
UNSW 12V 7
MOTOR 12V
33 POWER ON/OFF
RESET
D601,C601 R618,R619
23 RESET
51 DECK TERMINAL
S3
BY MODE MOTOR
9 MODE SENS B
12 MODE SENS A
R3
R2
PS1
AMP
REC SAFETY SW
S2
TAKE UP TURNTABLE
27 REEL FG (TU)
8 REC SAFE
SWD 5V
R4
D1
Q1
31 END SENS
INCL MAIN DECK [M4]
IC601
EXPV DATA 47
PICTURE MUTE 37
REC START 38
LP SPCL 43
AUDIO MUTE 36
S/M/EX CLOCK 44
V SYNC 13
Q601
V SYNC 28
SECAM 40
MESECAM 41
NTSC 3.58 42
BT 17
SYNC DET 34
S CURVE 6
P MUTE 2 35
M. DATA 51
M. CE 50
EXPT DATA 49
CN603
2 S/M/EX CLOCK
CN607
3 EXP V DATA
1 PICTURE MUTE
2 REC START
11 LP SPCL
6 AUDIO MUTE
10 GND
4 S/M/EX CLOCK
5 V SYNC
7 SECAM DET
8 MESECAM DET
9 NTSC 3.58 DET
From/To 03 MAIN CN308
CN605
3
5
6 S CURVE
12 S/M/EX CLOCK
4
13
8 UNSW 5V
10 M. DATA
11 M. CE
9
From/To 57 COLOR PROCESS
DRUM DRIVE 3
V PULSE 20
CN610
5 DRUM DRIVE
1 V PULSE
7 GND
9 GND
11 GND
8 SWD 5V
10 MOTOR 12V
12 SWD 5V
6 AVG FM
3 SERVO
2 PAUSE
4 CAP DRIVE
SWD 5V
MOTOR 12V
SWD 12V
From/To 03 SERVO CN406
AVG FM 5
SERVO 14
PAUSE 18
D603
D604
D602
CAP DRIVE 4
CAP REV 32
SWD 5V
MOTOR 12V
CN601
CN1
51 DECK TERMINAL
CN2
6 CAP DRIVE
1 CAP REV
2 SWD 5V
7 MOTOR 12V
57 CAP MDA
MOTOR 12V
LCM 1 1
LCM 2 2
CN602
MOTOR 12V
LCM 1
LCM 2
IC1
CONTROL LOGIC
55 LOADING MDA
M
LOADING MOTOR
A
B
C
E
F
G
H
1
2
3
4
5
6

3.9 TIMER/DISPLAY/SWITCH AND OPERATION BLOCK DIAGRAMS


2 1 TIMER/DISPLAY/SWITCH
FDP 1
TIMER
VIDEO
VPS
INDX
1 2 3 4 5 6 7 8
SU MO TU
WE TH FR SA
SC
DATE
REC
SP
LP
EP
PAL
SECAM
NTSC
PLAY
REPEAT
M
ITR
GO-TO
REMAIN
From 0 2 REGULATOR CN7
CN3
AC 4.6V
AC 4.6V
-30V
-30V
GRIDS
SEGMENTS
IC1
TIMER DATA
TIMER CLOCK
CTL CLOCK
From/To 0 4 MECHACON, CN606
CN1
TIMER DATA
TIMER CLOCK
CTL CLOCK
TP1 TEST
TEST
R12
UNSW 5.8V
Q1,D1,R1,R2
AC POWER FAILUREDE
POWER DOWN
UNSW 5.8V
D5
IC2
RESET AT CONNECT VCR TO AC
RESET
UNSW 5.8V
BACK UP
C4
PULL DOWN REGISTOR
RA2
-28V
RA1
PULL DOWN REGISTOR
KS 0
KS 1
KS 2
KS 3
REMOTE
IC101
COMP
LIMITER
INFRARED
UNSW 5.8V
Vcc
X2
X1
C8
X1
C6
C6 CLOCK
SWD 5V
LEDS
D101 NTSC 4.43
D102 NTSC 3.58
D103 SECAM
D104 MESECAM
D105 PAL
D106 AUTO TRACK
D107 PAUSE
PAUSE LED
AUTO TRACK LED
PAL LED
MESECAM LED
SECAM LED
NTSC 3.58 LED
NTSC 4.43 LED
LED DATA
POWER LED
2 2 OPERATION
CN1
CN2
OPERATION KEY MATRIX DIODE D108~D113,D115 D126,D127,D128 D129,D134
OPERATION KEY MATRIX SWITCH
S1 POWER
S3 AUTO/MANUAL
S2 SP/LP,EP
OPERATION KEY MATRIX SWITCH
S2 STOP/EJECT
S3 FF/FF SEARCH
S4 REW/REW SEARCH
S5 TV/VIDEO
S6 REC/ITR
S7 PLAY x 2
S8 PAUSE
S18 C. ADJ/PROG.
S19 START
S21 CANCEL/SKIP/RESET
S22 RESET/SKIP/C. MEMO
S23 SELECT
S24 TIMER
S25 SET+/TRACK+
S26 SET-/TRACK-
S101 MESECAM/SECAM
S102 NTSC/SECAM/PAL
S103 4.43/3.58
SWD 5V
R2
D1 POWER

3.1 0 SERVO BLOCK DIAGRAM



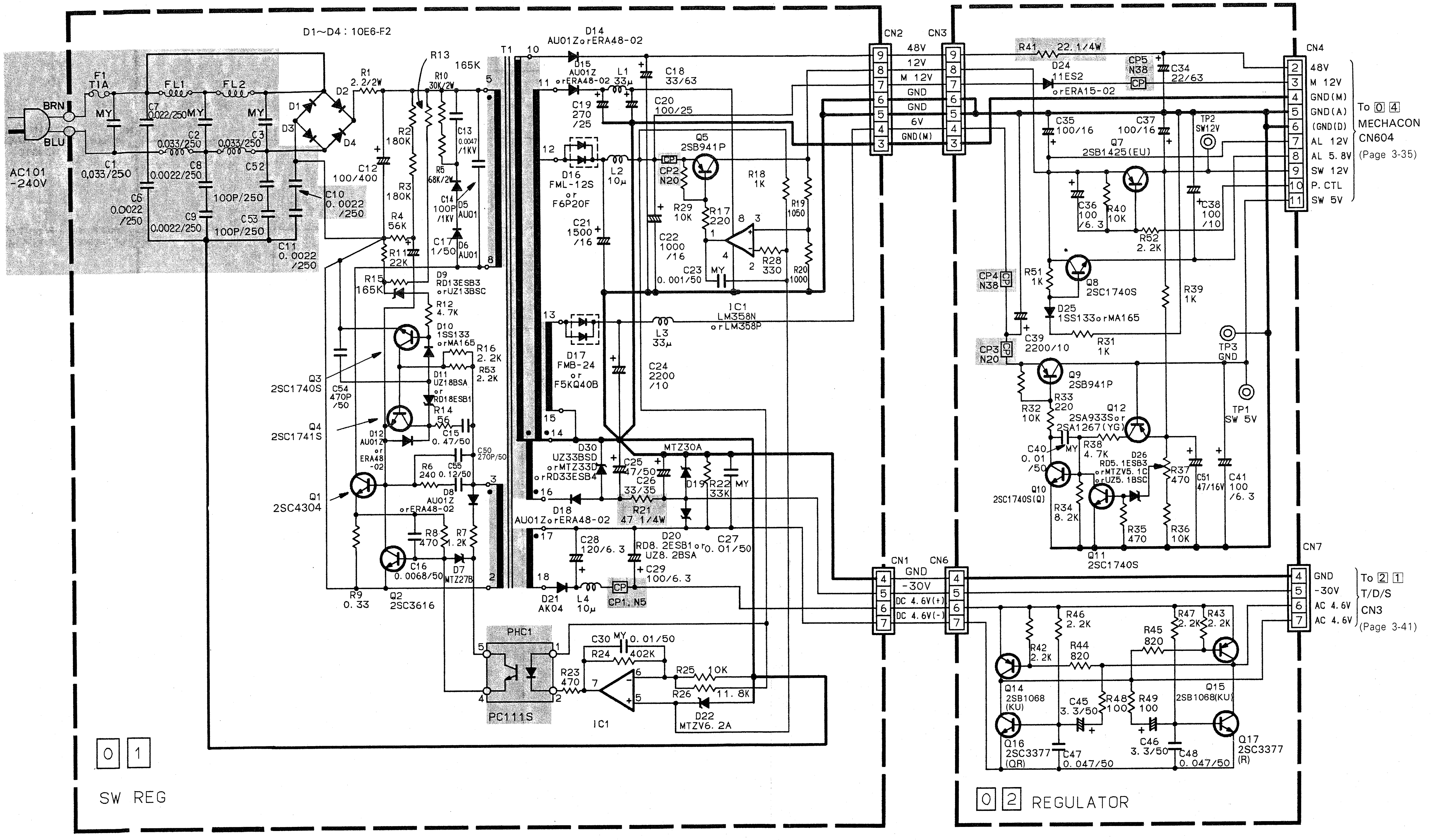
4 8 SERVO
SWD 5V
Vcc
PAL/SECAM/NTSC (4.3M)
Q401
TP603
DRUM START
MODE D
MODE B
MODE C
MODE A
GND
V PULSE
D405
D406
R420
R421
R420 NTSC SW POINT
R421 PAL/SECAM SW POINT
From/To 0 4 MECHACON CN603
CN403
CTL PAUSE
CAP FG
S.M.EX CLOCK
SRL DATA
D408
D407
CTL PULSE
COUNT DOWN
SERIAL CLOCK
SERIAL DATA
SERIAL DECODER
FUNCTION MODE
DRUM FF 8 V PULSE GEN.
From/To 0 4 MECHACON CN610
CN406
CN404
DRUM PG/FG
DRUM DRIVE
From/To 5 8 DRUM MOTOR
R418,C411
LPF
From/To 0 3 MAIN (VIDEO) CN309
CN402
C. CYNC
DRUM FF
SYNC SEP
YNR PULSE
VIDEO FF
AUDIO FF
REF 30HZ
TP411 DRUM FF
DRUM SEL B
D404
R415 C409,C410
ACTIVE FILTER
DIF AMP
DRUM GAIN
R413 R414
DRUM F-V CONV
D403
D402
D401
PAUSE
SERVO
CAP DRIVE
AVG FM
VIDEO FM
From 0 3 MAIN (VIDEO) CN310
CN401
3 FSC
3FSC
SW 11
SW 9
SPCL PB:ON
R411
NONLINEAR & PHASE LOOP FILTER
R410 R412 R438 C407 C408 D409 D410
DRUM PHASE DET
DRUM REF
CAP REF
SW 10
Vcc/2
SW 8
CAP PD FIX:ON
M:LOOP ON, L:CAP/DRUM PD FIX
INDEX
CTL CLOCK
"0" "1" "0"
DUTY I/O
REC/PB CTL GEN.INDEX DET
R430,C421
R429,C419
TP401 CTL PULSE
CAP PHASE DET
R408
R409,C405,C406
PHASE LOOP FILTER
CAP F-V CONV
SW 4
SW 7
SW 6
SW 5
SW 1
REC:ON
R427 R428 R439
DRUM START
CTL GAIN & FILTER
C416 C417 C418
C415
AMP
IC401
CAP GAIN SW
R405 R406 R407
R402 R403
ACTIVE FILTER
C403 C404
R401
RECORDING TAPE
A/CTL HEAD
1 2 AUDIO CTL HEAD
CN2
CN405
SW 3
SW 2
PB
REC
GND
IC501
C502 L1
HPF
VCA
DRUM FF
TIM
SAMPLING & HOLD
OUT
INTEGRATED CIRCUIT
TP501 AVG FM
SWD 5V

MODE A: SP
MODE B: $\overline{\text{SP}}$
MODE C: $\overline{\text{DRUM START}}$
MODE D: NTSC/$\overline{\text{PAL/SECAM}}$

SWITCH OF IC 401 TABLE

SW 5	SW6	SW7	SP MODE	EP MODE
OFF	OFF	OFF		X1, X2
ON	OFF	OFF	SLOW	SLOW
OFF	OFF	ON	X1, X2	X3, X7
OFF	ON	OFF	X3	X13
OFF	ON	ON	X7	X21

3.11 SWITCHING REGULATOR AND REGULATOR SCHEMATIC DIAGRAMS


D1~D4 : 10E6-F2
AC101 -240V
BRN
BLU
F1 T1A
FL1
FL2
C1 0.033/250
C2 0.033/250
C3 0.033/250
C6 0.0022 /250
C7 0.022/250
C8 0.0022/250
C9 0.0022/250
C10 0.0022 /250
C11 0.0022 /250
C52 100P/250
C53 100P/250
R1 2.2/2W
R13 165K
R10 30K/2W
C13 0.0047 /1KV
R5 68K/2W
C14 100P /1KV
D5 AU01
D6 AU01
C17 1/50
R2 180K
R3 180K
R4 56K
R11 22K
R15 165K
C12 100/400
D9 RD13ESB3 or UZ13BSC
R12 4.7K
D10 1SS133 or MA165
R16 2.2K
R53 2.2K
D11 UZ18BSA or RD18ESB1
R14 56
C15 0.47/50
C50 270P/50
Q3 2SC1740S
C54 470P /50
Q4 2SC1741S
D12 AU01Z or ERA48 -02
R6 240
C55 0.12/50
D8 AU01Z or ERA48-02
Q1 2SC4304
R8 470
R7 1.2K
D7 MTZ27B
C16 0.0068/50
R9 0.33
Q2 2SC3616
T1
D14 AU01Z or ERA48-02
D15 AU01Z or ERA48-02
L1 33μ
C18 33/63
C19 270 /25
C20 100/25
D16 FML-12S or F6P20F
L2 10μ
C21 1500 /16
Q5 2SB941P
CP2 N20
R29 10K
R17 220
R18 1K
R19 1050
C22 1000 /16
R28 330
R20 1000
C23 0.001/50
IC1 LM358N or LM358P
D17 FMB-24 or F5KQ40B
L3 33μ
C24 2200 /10
D30 UZ33BSD or MTZ33D or RD33ESB4
MTZ30A
C25 47/50
C26 33/35
D19
R22 33K
R21 47 1/4W
D18 AU01Z or ERA48-02
C28 120/6.3
D20 RD8.2ESB1 or UZ8.2BSA
C27 0.01/50
C29 100/6.3
D21 AK04
L4 10μ
CP1, N5
PHC1
PC111S
C30 0.01/50
R24 402K
R23 470
R25 10K
R26 11.8K
D22 MTZV6.2A
IC1
SW REG
CN2
CN3
48V
12V
M 12V
GND
GND
6V
GND(M)
CN1
CN6
GND
-30V
DC 4.6V(+)
DC 4.6V(-)
R41 22.1/4W
CP5 N38
D24 11ES2 or ERA15-02
C34 22/63
C35 100/16
C37 100/16
Q7 2SB1425(EU)
TP2 SW12V
C36 100 /6.3
R40 10K
R52 2.2K
C38 100 /10
CP4 N38
R51 1K
Q8 2SC1740S
R39 1K
D25 1SS133 or MA165
C39 2200/10
R31 1K
CP3 N20
TP3 GND
Q9 2SB941P
R32 10K
R33 220
Q12 2SA933S or 2SA1267(YG)
TP1 SW 5V
C40 0.01 /50
R38 4.7K
D26 RD5.1ESB3 or MTZV5.1C or UZ5.1BSC
R37 470
C51 47/16V
C41 100 /6.3
Q10 2SC1740S(Q)
R34 8.2K
R35 470
R36 10K
Q11 2SC1740S
R46 2.2K
R42 2.2K
R44 820
R45 820
R47 2.2K
R43 2.2K
Q14 2SB1068 (KU)
Q15 2SB1068(KU)
C45 3.3/50
R48 100
R49 100
C46 3.3/50
Q16 2SC3377 (QR)
C47 0.047/50
C48 0.047/50
Q17 2SC3377 (R)
CN4
48V
M 12V
GND(M)
GND(A)
(GND(D)
AL 12V
AL 5.8V
SW 12V
P.CTL
SW 5V
To 0 4 MECHACON CN604 (Page 3-35)
CN7
GND
-30V
AC 4.6V
AC 4.6V
To 2 1 T/D/S CN3 (Page 3-41)
0 1
0 2 REGULATOR

POWER DC Voltage

SYMBOL No.		REC	PB
INTEGRATED CIRCUIT			
IC1	1	—	—
	2	6.1	6.1
	3	6.1	6.1
	4	0.0	0.0
	5	6.1	6.1
	6	6.1	6.1
	7	11.5	11.5
	8	18.4	18.4
TRANSISTOR			
Q5	B	12.3	12.3
	C	12.5	12.5
	E	12.3	12.3
Q7	B	11.8	11.8
	C	12.5	12.5
	E	12.5	12.5
Q8	B	6.6	6.6
	C	12.5	12.5
	E	5.9	5.9
Q9	B	5.7	5.7
	C	5.4	5.4
	E	6.4	6.4
Q10	B	0.6	0.6
	C	5.3	5.3
	E	0.0	0.0
Q11	B	0.5	0.5
	C	0.6	0.6
	E	0.0	0.0
Q12	B	5.4	5.4
	C	6.1	6.1
	E	6.1	6.1
Q14	B	-18.3	-18.3
	C	-20.0	-20.0
	E	-17.8	-17.8
Q15	B	-18.3	-18.3
	C	-20.0	-20.0
	E	-17.9	-17.9
Q16	B	-22.4	-22.4
	C	-20.0	-20.0
	E	-22.2	-22.2
Q17	B	-22.4	-22.4
	C	-20.0	-20.0
	E	-22.3	-22.3
CONNECTOR			
CN3	3	0.0	0.0
	4	0.5	0.5
	5	0.0	0.0
	6	0.0	0.0
	7	13.1	13.1
	8	12.5	12.5
	9	48.7	48.7
CN4	2	18.1	18.1
	3	12.3	12.3
	4	0.0	0.0
	5	0.0	0.0
	6	0.0	0.0
	7	12.5	12.5
	8	5.9	5.9
	9	12.5	12.5
	10	3.9	3.9
	11	5.4	5.4
PHOTO COUPLER			
PHC1	1	13.1	13.1
	2	12.0	12.0
	4	0.1	0.1
	5	5.5	5.5

NOTES: UNLESS OTHERWISE SPECIFIED

ALL RESISTANCE VALUES ARE IN OHMS.

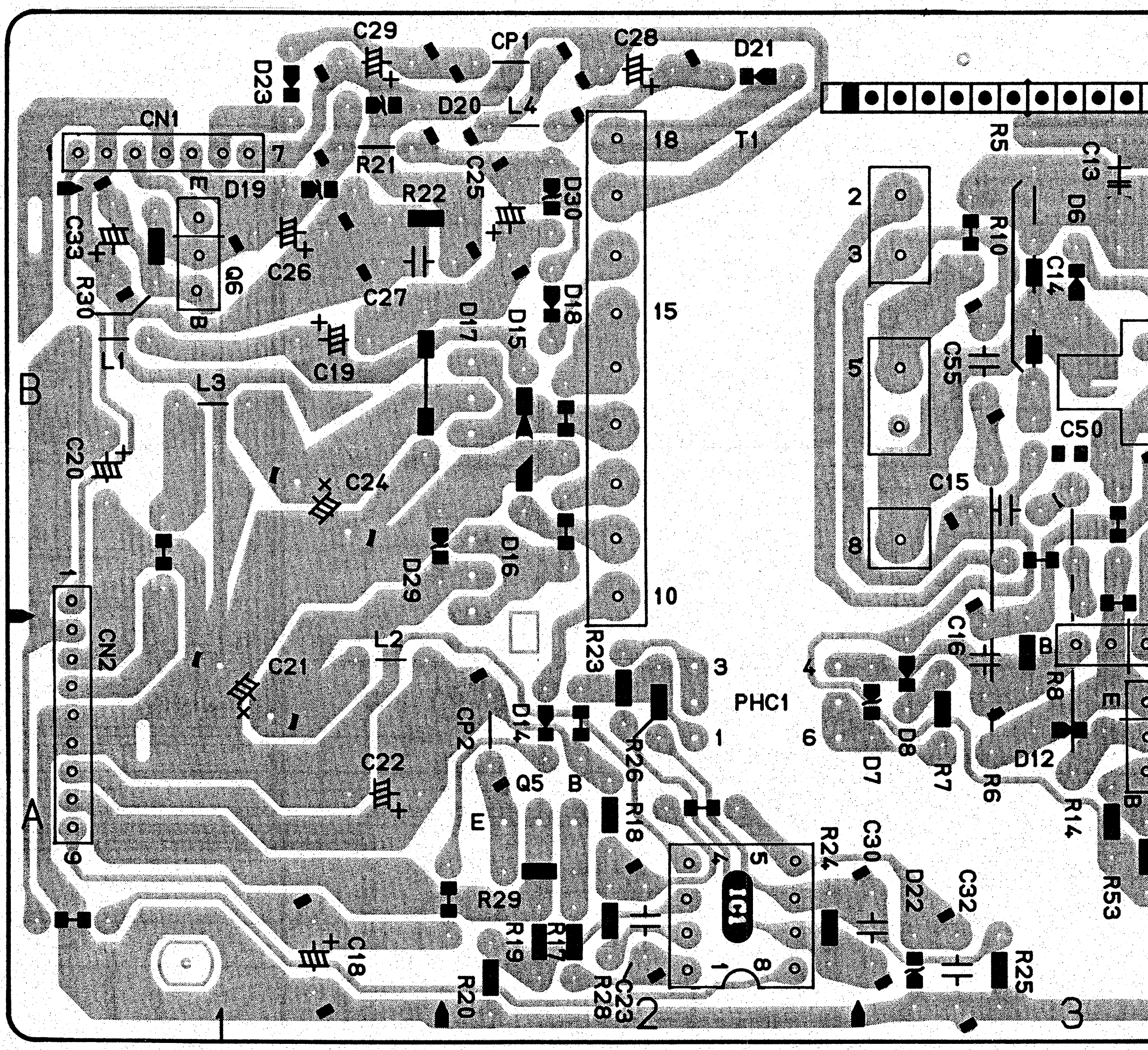
ALL CAPACITANCE VALUES ARE IN μF.

+ ELECTROLYTIC

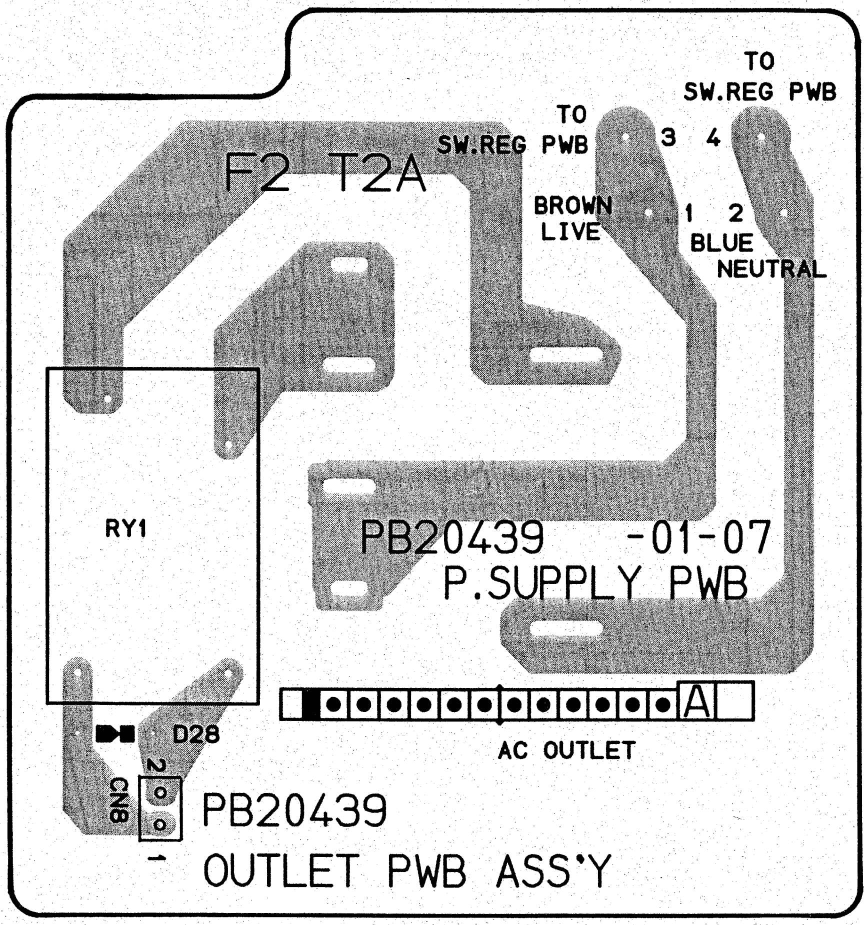
CERAMIC MY MYLAR

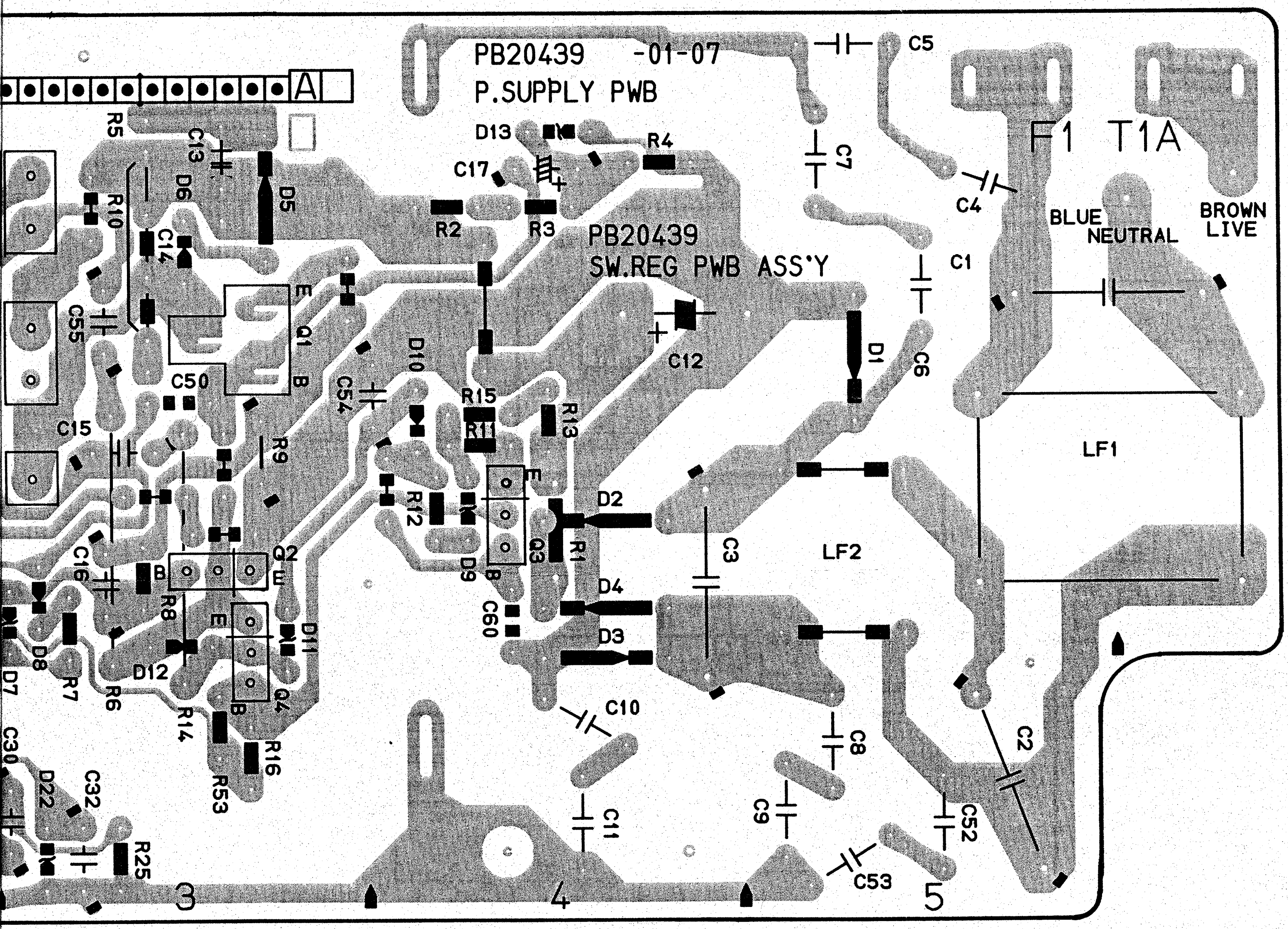
3.12 SWITCHING REGULATOR AND REGULATOR CIRCUIT BOARDS

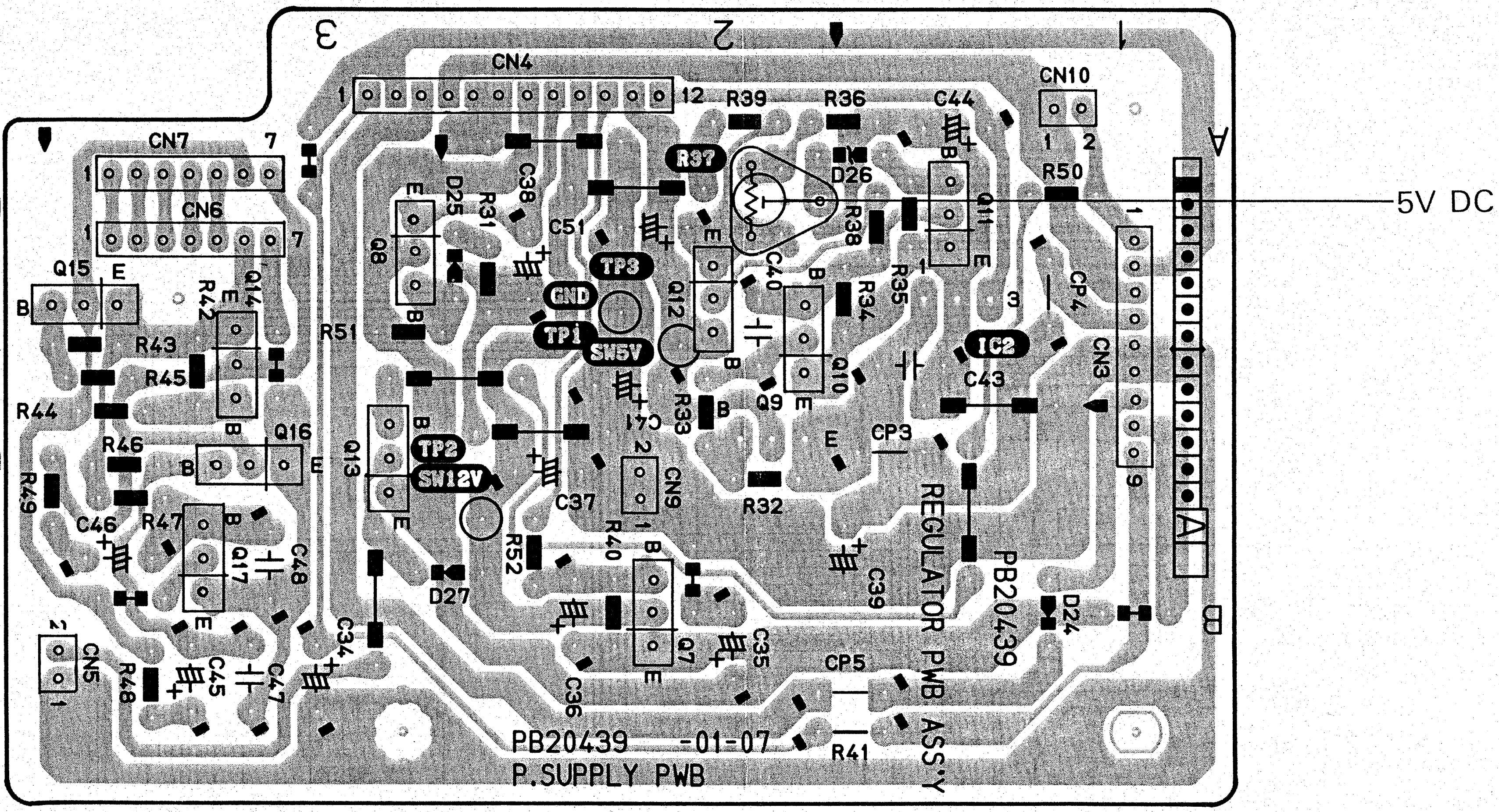
—SWITCHING REGULATOR—


C29
CP1
C28
D21
D23
D20
L4
CN1
T1
18
15
10
R5
C13
R21
C25
D30
D19
R22
Q6
C26
C33
R30
C27
D18
D17
D15
E
B
L1
C19
L3
C24
C20
D16
D29
CN2
L2
C21
R23
C22
CP2
D14
Q5
R26
R18
R29
R19
R17
R20
R28
C23
C18
IC1
PHC1
R24
C30
D22
C32
R25
D7
D8
R7
R6
D12
R14
R53
R8
C16
C15
C50
C55
C14
D6
R10
A
B
1
2
3
4
5
6
8
9

—REGULATOR—

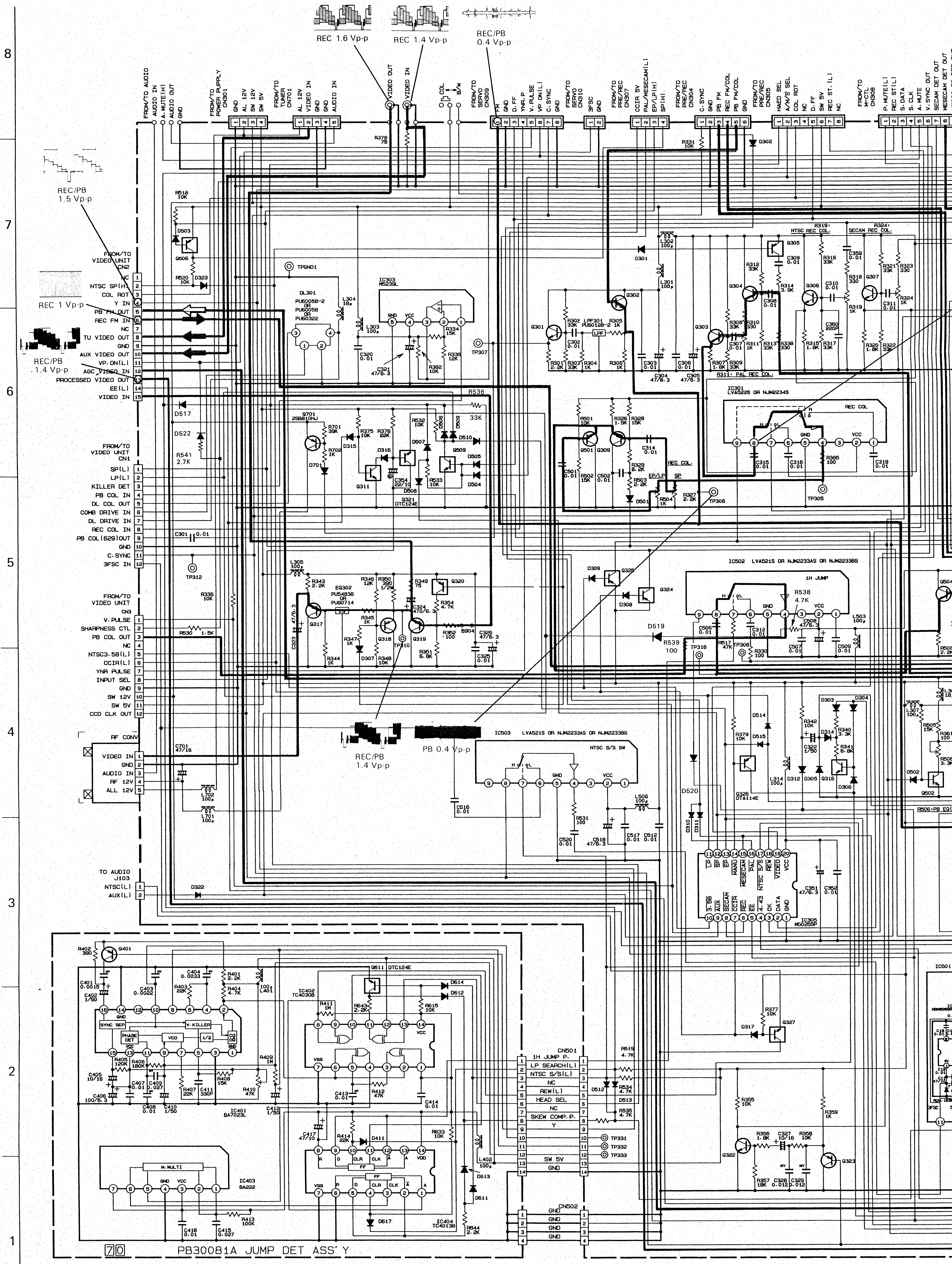

TO
SW.REG PWB
TO
SW.REG PWB
3
4
1
2
BROWN
LIVE
BLUE
NEUTRAL
F2 T2A
RY1
PB20439 -01-07
P.SUPPLY PWB
A
AC OUTLET
D28
CN8
PB20439
OUTLET PWB ASS'Y

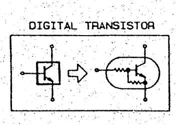

PB20439 -01-07
P.SUPPLY PWB
PB20439
SW.REG PWB ASS'Y
F1 T1A
BLUE
NEUTRAL
BROWN
LIVE
LF1
LF2
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C30
C32
C50
C52
C53
C54
C55
C60
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D22
Q1
Q2
Q3
Q4
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R25
R53
A
3
4
5

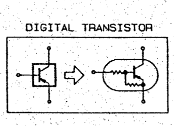

5V DC
REGULATOR PWB ASS'Y
PB20439
PB20439 -01-07
P.SUPPLY PWB
CN3
CN4
CN5
CN6
CN7
CN9
CN10
IC2
TP1
TP2
TP3
GND
SW5V
SW12V
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
C34
C35
C36
C37
C38
C39
C40
C41
C43
C44
C45
C46
C47
C48
C51
CP3
CP4
CP5
D24
D25
D26
D27
R31
R32
R33
R34
R35
R36
R37
R38
R39
R40
R41
R42
R43
R44
R45
R46
R47
R48
R49
R50
R51
R52
1
2
3
A
B

F G H I J K

3.13 VIDEO AND JUMP DET SCHEMATIC DIAGRAM


8
7
6
5
4
3
2
1
REC 1.6 Vp-p
REC 1.4 Vp-p
REC/PB
0.4 Vp-p
REC/PB
1.5 Vp-p
REC 1 Vp-p
REC/PB
1.4 Vp-p
REC/PB
1.4 Vp-p
PB 0.4 Vp-p
FROM/TO AUDIO
AUDIO IN
A. MUTE(H)
AUDIO OUT
GND
FROM/TO POWER PUPPLY CN301
GND
AL 12V
SW 12V
SW 5V
FROM/TO TUNER CN701
AL 12V
VIDEO IN
GND
GND
AUDIO IN
VIDEO OUT
VIDEO IN
COL
B/W
FROM/TO SERVO CN309
FM
GND
D.FF
YNR. P
V. PULSE
VP ON(L)
C. SYNC
GND
FROM/TO SERVO CN310
3FSC
GND
FROM/TO PRE/REC CN307
CCIR 5V
PAL/MESECAM(L)
EP/LP(H)
SP(H)
FROM/TO PRE/REC CN304
C. SYNC
GND
PB FM
REC FM/COL
PB FM/COL
GND
FROM/TO PRE/REC CN305
HAED SEL
A/M/S SEL
COL ROT
NC
D. FF
SW 5V
REC ST. (L)
NC
FROM/TO H-CTL CN308
P. MUTE(L)
REC ST(L)
S. DATA
S. CLK
A. MUTE
V. SYNC OUT
SECAM DET OUT
MESECAM DET OUT
FROM/TO VIDEO UNIT CN2
NC
NTSC SP(H)
COL ROT
Y IN
PB FM OUT
REC FM IN
NC
TU VIDEO OUT
GND
AUX VIDEO OUT
VP. ON(L)
AGC VIDEO IN
PROCESSED VIDEO OUT
EE(L)
VIDEO IN
FROM/TO VIDEO UNIT CN1
SP(L)
LP(L)
KILLER DET
PB COL IN
DL COL OUT
COMB DRIVE IN
DL DRIVE IN
REC COL IN
PB COL(629)OUT
GND
C. SYNC
3FSC IN
FROM/TO VIDEO UNIT CN3
V. PULSE
SHARPNESS CTL
PB COL OUT
NC
NTSC3.58(L)
CCIR(L)
YNR PULSE
INPUT SEL
GND
SW 12V
SW 5V
CCD CLK OUT
RF CONV
VIDEO IN
GND
AUDIO IN
RF 12V
ALL 12V
TO AUDIO J103
NTSC(L)
AUX(L)
TPGND1
DL301
PU60058-2 OR PU60058 OR PU60322
L304 18μ
IC303 M5239L
L303 100μ
C320 0.01
C321 47/6.3
R334 15K
R335 12K
R382 10K
TP307
R378 75
R518 10K
D503
Q506
R520 10K
D323
D517
D522
R541 2.7K
Q701 2SB810HJ
R701 39K
R702 1K
D701
D315
R375 10K
R376 22K
D316
Q311
C354 22/10
D508
Q321 DTC124E
R532 10K
D507
D506
D509
D510
Q509
D505
D504
R533 10K
R536
33K
C301 0.01
TP312
R336 10K
R530 1.5K
L305 100μ
R343 2.2K
EQ302 PU54838 OR PU60714
C323 47/6.3
Q317
R346 12K
R350 390 1/2W
R345 1K
R347 1K
D307
Q318
TP310
R348 10K
Q319
R349 75
Q320
C324 470/6.3
R354 4.7K
R362 100
B904
C326 47/6.3
C325 0.01
R351 6.8K
R344 1K
C701 47/16
L702 100μ
L701 100μ
D322
R331 10K
D302
D301
L302 100μ
L301 100μ
Q301
Q302
R302 33K
LPF301 PU60128-2
R305 1K
LPF
C302 0.01
R301 2.2K
R303 33K
R304 1K
R306 1K
C303 0.01
C304 47/6.3
C306 0.01
C305 47/6.3
R311: PAL REC COL.
R319: NTSC REC COL.
R324: SECAM REC COL.
Q305
C309 0.01
R316 33K
C359 0.01
R312 33K
Q304
R314 3.9K
Q306
C310 0.01
R318 330
Q307
R321 33K
R323 330
C308 0.01
R324 1K
C311 0.01
Q303
R308 33K
R310 330
R319 1K
C360 220P
C307 0.01
R311 1K
R313 33K
R338 330
R315 1.8K
R317 33K
R320 1.8K
R322 33K
R307 1.8K
R309 33K
IC301 LVA522S OR NJM2234S
REC COL
H
L
GND
VCC
C315 0.01
C316 0.01
R385 100
C319 0.01
TP305
R501 10K
R326 1.5K
R328 15K
Q501
Q309
C314 0.01
R329 8.2K
REC COL.
EP/LP
SP
C501 0.01
R502 15K
C502 0.01
R503 2.2K
R504 1K
D501
R327 2.2K
TP306
IC502 LVA521S OR NJM2233AS OR NJM2233BS
1H JUMP
D309
Q325
Q324
D308
D519
R539 100
R538 4.7K
C508 47/6.3
C506 0.01
R517 47K
TP308
C312 0.01
R330 100
C507 0.01
C509 0.01
L503 100μ
TP316
IC503 LVA521S OR NJM2233AS OR NJM2233BS
NTSC S/S SW
C516 0.01
R531 100
L506 100μ
C520 0.01
C518 47/6.3
C517 0.01
C512 0.01
D514
R379 10K
D515
D520
L314 100μ
Q326 DTA114E
D310
D311
D303
D304
R342 10K
D314
R340 3.3K
C322 1/50
R341 6.8K
D312
D305
Q316
D306
L307 100μ
R505 15K
D502
Q502
R506·PB EQ
LP
SP
EP
MANU
MESECAM
PAL
NTSC S/S
REW
VIDEO
VCC
3.58
AUX
SECAM
CCIR
REC
EE
4.43
CK
DATA
GND
C351 47/6.3
C352 0.01
IC305 M50255P
R402 390
Q401
C404 0.0033
R401 2.2K
C401 0.0015
C402 1/50
C403 0.0022
R403 22K
R404 4.7K
L401 100μ
SYNC SEP
V. KILLER
PHASE DET
VCO
1/2
CO DET
R405 120K
R406 180K
C405 10/16
C406 100/6.3
C407 0.01
C409 0.027
R407 22K
C411 330P
R408 15K
R410 47K
R409 1M
C408 0.01
C410 1/50
IC401 BA7023L
C412 1/50
Q611 DTC124E
D614
D612
IC402 TC4030B
R411 1M
R643 2.2K
R615 10K
VSS
VCC
C413 0.01
R412 47K
C414 0.01
C417 47/10
R414 22K
D411
R633 10K
R
D
CLR
CLK
VDD
FF
L402 100μ
D613
D611
D617
IC404 TC40138
R644 2.2K
M. MULTI
IC403 BA222
R413 100K
C416 0.01
C415 0.027
CN501
1H JUMP P.
LP SEARCH(L)
NTSC S/S(L)
NC
REW(L)
HEAD SEL
NC
SKEW COMP. P.
Y
SW 5V
GND
TP331
TP332
TP333
CN502
GND
GND
GND
R377 10K
Q327
D317
R519 4.7K
D512
R534 4.7K
D513
R535 4.7K
R355 10K
R359 1K
Q322
R356 1.8K
C327 10/16
R358 10K
Q323
R357 18K
C328 0.012
C329 0.012
IC501
70
PB30081A JUMP DET ASS'Y

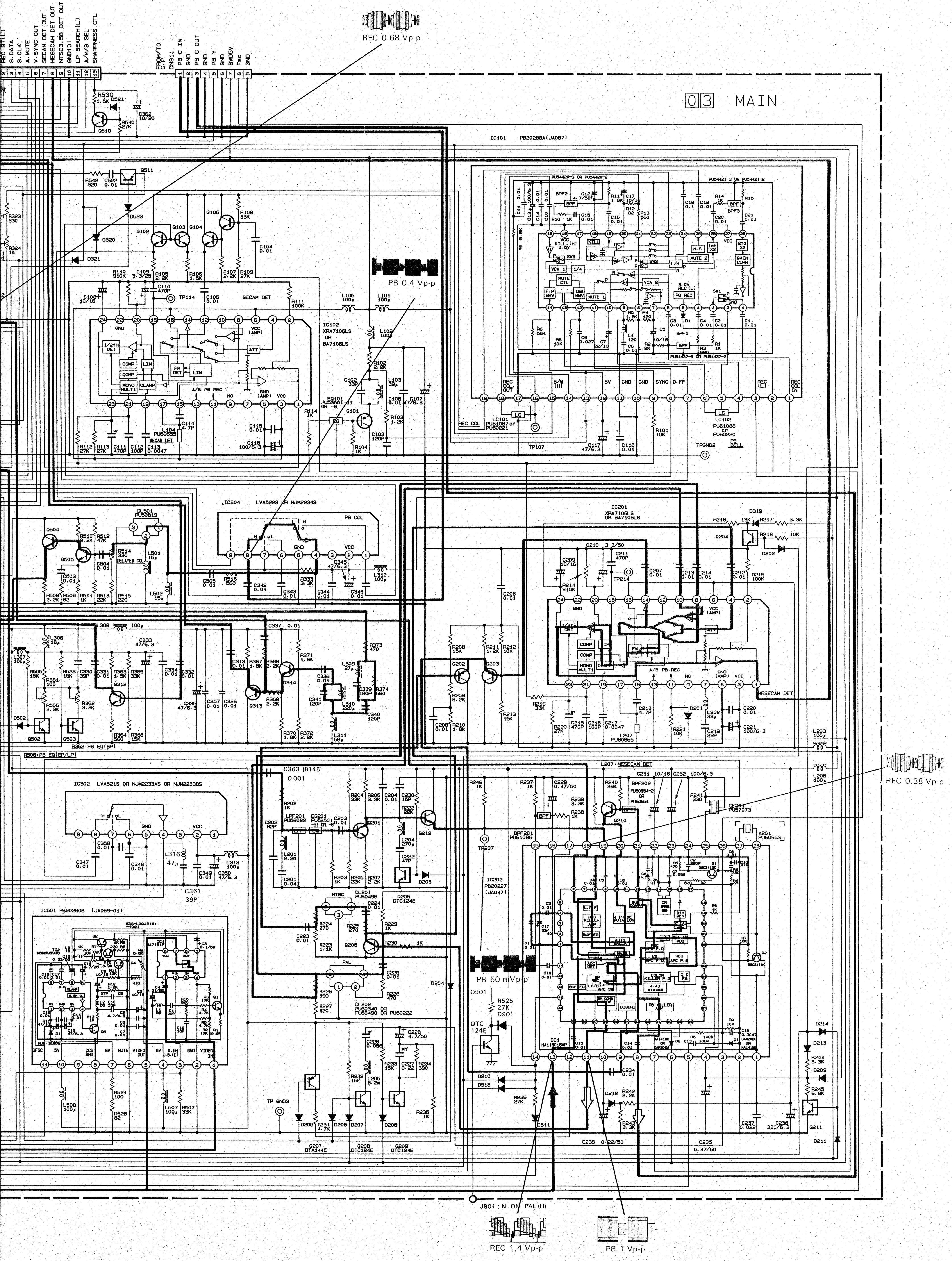

DIGITAL TRANSISTOR


DIGITAL TRANSISTOR

NOTES: UNLESS OTHERWISE SPECIFIED
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.
ELECTROLYTIC
CERAMIC
MYLER
NON POLER

ALL DIODE ARE 1SS133 or MA165.
ALL NPN TRANSISTORS ARE 2SC3199(GB) OR 2SC1740(RS).
ALL PNP TRANSISTORS ARE 2SA1267(YG) OR 2SA133(RS).
ALL NPN DIGITAL TRANSISTORS ARE DTC144E.
ALL PNP DIGITAL TRANSISTORS ARE DTA124E.

A B C D E


03 MAIN
REC 0.68 Vp-p
PB 0.4 Vp-p
REC 0.38 Vp-p
PB 50 mVp-p
REC 1.4 Vp-p
PB 1 Vp-p
J901 : N. ON PAL (H)
REC ST(L)
S.DATA
S.CLK
A.MUTE
V.SYNC OUT
SECAM DET OUT
MESECAM DET OUT
NTSC3.58 DET OUT
GND(D)
LP SEARCH(L)
A/V/S SEL
SHARPNESS CTL
FROM/TO CN311
PB C IN
GND
PB C OUT
GND
PB Y
GND
SW25V
Fsc
GND
IC101 PB20288A(JA057)
PU54420-3 OR PU54420-2
PU54421-3 OR PU54421-2
PU54437-3 OR PU54437-2
IC102 XRA7106LS OR BA7106LS
SECAM DET
TP114
TP107
TPGND2
PB BELL
LC101 PU61087 or PU60221
LC102 PU61086 or PU60220
REC COL
REC COL OUT
REC COL IN
IC304 LVA522S OR NJM2234S
PB COL
DL501 PU50B19
DELAYED COL
IC201 XRA7106LS OR BA7106LS
MESECAM DET
L207 MESECAM DET
BPF202 PU60654-2 OR PU60654
CF201 PU57073
X201 PU60653
BPF201 PU61096
IC202 PB20227 (JA047)
IC1 HA11801SMP
TP207
IC302 LVA521S OR NJM2233AS OR NJM2233BS
R362:PB EQ(SP)
R506:PB EQ(EP/LP)
C363 (B145) 0.001
LPF201 PU58022
EQ201 PU53501-11 OR -6
DL201 PU60496
DL202 PU60340 OR PU60222
NTSC
PAL
IC501 PB20290B (JA059-01)
3FSC
5V
9V
MUTE
VIDEO OUT
0.5H U.B.(L)
GND
VIDEO IN
TP GND3
Q901
DTC124E
D901
R525 27K
F
G
H
I
J
K

VIDEO & JUMP DET. DC Voltage

1/2

SYMBOL	No.	REC	PB
INTEGRATED CIRCUIT			
IC101	1	2.4	2.2
	2	0.0	0.0
	3	0.2	10.8
	4	2.7	3.6
	5	0.0	0.0
	6	2.7	3.0
	7	2.4	2.4
	8	0.0	2.4
	9	0.2	0.2
	10	0.0	0.0
	11	0.0	0.0
	12	5.0	5.0
	13	5.0	5.0
	14	1.5	1.5
	15	—	—
	16	3.0	2.7
	17	0.0	0.0
	18	3.0	2.7
	19	0.0	0.0
IC102	1	4.8	4.4
	2	3.6	3.6
	3	5.1	5.1
	4	3.6	3.6
	5	0.0	0.0
	6	5.1	5.1
	7	3.3	3.3
	8	3.6	3.6
	9	0.0	0.0
	10	3.6	3.6
	11	0.0	0.0
	12	3.6	3.6
	13	0.0	0.0
	14	2.3	2.3
	15	3.7	3.7
	16	5.1	5.1
	17	5.1	5.1
	18	2.3	2.3
	19	2.7	2.7
	20	3.2	3.2
	21	0.3	0.3
	22	0.0	0.0
	23	2.6	2.6
	24	2.5	2.9
IC201	1	4.4	4.4
	2	3.5	3.5
	3	4.4	4.4
	4	3.5	3.5
	5	5.0	5.0
	6	5.0	5.0
	7	0.0	0.0
	8	3.6	3.6
	9	3.2	3.2
	10	3.6	3.6
	11	0.8	4.6
	12	3.6	3.6
	13	5.7	5.7
	14	2.3	2.3
	15	3.7	3.7
	16	5.1	5.1
	17	5.1	5.1
	18	2.4	2.2
	19	2.5	9.5
	20	3.3	4.1
	21	0.3	0.3
	22	0.0	0.0
	23	2.6	2.6
	24	2.6	2.6
IC202	1	4.8	4.8
	2	0.0	0.0
	3	2.2	2.2
	4	1.2	1.2
	5	0.4	0.4
	6	0.2	10.7
	7	—	—
	8	0.2	0.2
	9	3.1	3.1
	10	2.2	2.2
	11	2.2	2.2
	12	0.8	0.8
	13	1.5	1.5
	14	2.5	2.5
	15	0.0	0.0
	16	1.5	1.5
	17	2.3	2.9
	18	3.1	4.9
IC202	19	2.2	2.2
	20	3.7	3.7
	21	3.5	3.5
	22	3.4	2.8
	23	2.7	2.7
	24	2.7	2.7
	25	0.0	0.0
	26	3.4	3.4
	27	3.6	3.6
	28	4.0	4.0
IC301	1	2.6	2.6
	2	5.1	5.1
	3	0.0	0.0
	4	1.9	1.9
	5	0.0	0.0
	6	2.7	2.7
	7	3.6	3.6
	8	0.6	0.6
	9	0.0	5.1
IC302	1	—	—
	2	5.1	5.1
	3	—	—
	4	2.3	2.3
	5	0.0	0.0
	6	3.1	3.1
	7	5.1	5.1
	8	3.1	3.1
	9	—	—
IC303	1	1.6	1.6
	2	2.3	2.3
	3	5.2	5.2
	4	5.2	5.2
	5	0.0	0.0
IC304	1	2.7	2.7
	2	5.2	5.2
	3	—	—
	4	2.0	2.0
	5	0.0	0.0
	6	2.7	2.7
	7	3.6	3.6
	8	2.7	2.7
	9	0.0	0.0
IC305	1	0.0	0.0
	2	0.1	0.1
	3	0.4	0.4
	4	5.0	5.0
	5	0.3	0.3
	6	0.3	10.9
	7	0.2	3.9
	8	0.1	3.9
	9	0.2	0.2
	10	4.9	3.6
	11	5.1	0.1
	12	0.1	0.8
	13	3.7	3.7
	14	4.9	4.9
	15	2.6	2.6
	16	0.1	0.1
	17	4.1	4.1
	18	4.6	4.6
	19	11.8	0.4
	20	4.9	4.9
IC401	1	—	—
	2	0.0	0.0
	3	0.0	0.0
	4	1.2	1.2
	5	3.4	3.4
	6	5.1	5.1
	7	0.8	0.8
	8	2.6	2.6
	9	2.5	2.5
	10	2.5	2.5
	11	2.5	2.5
	12	—	—
	13	5.1	5.1
	14	0.0	0.0
	15	3.0	3.5
	16	3.2	3.2
IC402	1	5.1	5.1
	2	0.1	0.1
	3	5.1	5.1
	4	5.1	5.1
	5	5.1	5.1
	6	0.1	0.1
	7	0.0	0.0
	8	4.6	4.6
	9	0.1	0.1
	10	5.1	5.1
	11	4.2	4.2
	12	5.1	5.1
	13	0.5	0.5
	14	5.1	5.1
IC403	1	0.1	0.1
	2	0.1	0.1
	3	5.1	5.1
	4	0.0	0.2
	5	5.1	5.1
	6	0.1	0.1
	7	5.1	5.1
IC404	1	0.1	0.1
	2	5.0	5.0
	3	0.1	0.1
	4	5.1	5.1
	5	5.0	5.0
	6	0.0	0.0
	7	0.0	0.0
	8	0.0	0.0
	9	5.0	5.0
	10	5.1	5.1
	11	5.1	5.1
	12	5.0	5.0
	13	—	—
	14	5.1	5.1
IC501	1	2.5	1.9
	2	0.0	0.0
	3	3.4	3.4
	4	5.0	5.0
	5	1.5	1.5
	6	0.0	0.0
	7	8.8	8.8
	8	0.0	0.0
	9	0.0	0.0
	10	5.0	5.0
	11	0.1	0.1
IC502	1	2.7	2.7
	2	5.0	5.0
	3	—	—
	4	2.0	2.0
	5	2.7	2.7
	6	2.7	2.7
	7	3.8	3.8
	8	2.6	2.6
	9	0.8	0.8
IC503	1	—	—
	2	5.0	5.0
	3	—	—
	4	1.9	1.9
	5	0.0	0.0
	6	2.6	2.6
	7	4.0	4.0
	8	2.6	2.6
	9	—	—
TRANSISTOR			
Q101	B	0.0	1.1
	C	0.0	0.0
	E	1.5	1.8
Q102	B	0.0	2.5
	C	5.0	5.5
	E	0.0	1.9
Q103	B	0.0	2.5
	C	5.0	5.0
	E	1.0	1.9
Q104	B	1.6	5.0
	C	5.0	5.0
	E	1.0	1.9
Q105	B	2.2	2.2
	C	5.0	5.0
	E	1.6	5.0
Q201	B	1.9	1.9
	C	2.8	2.8
	E	1.3	1.3
Q202	B	5.0	5.0
	C	0.0	0.0
	E	3.7	3.7
Q203	B	3.1	3.1
	C	0.0	0.0
	E	3.7	3.7
Q204	B	0.0	0.0
	C	2.5	2.5
	E	0.0	0.0
Q205	B	2.6	2.6
	C	0.0	0.0
	E	0.0	0.0
Q206	B	2.2	2.2
	C	0.0	0.0
	E	2.9	2.9
Q207	B	5.1	0.6
	C	0.9	5.2
	E	5.1	5.1
Q208	B	0.8	0.6
	C	0.0	10.2
	E	0.0	0.0
Q209	B	0.8	3.3
	C	0.0	0.0
	E	0.0	0.0
Q210	B	3.4	3.4
	C	5.0	5.0
	E	3.5	3.5
Q211	B	0.0	0.0
	C	2.2	1.3
	E	0.0	0.0
Q212	B	2.8	2.8
	C	4.9	4.9
	E	2.2	2.2
Q301	B	2.5	2.5
	C	5.0	5.0
	E	1.9	1.9
Q302	B	2.3	2.8
	C	5.0	5.0
	E	1.6	2.2
Q303	B	2.5	2.5
	C	0.0	5.1
	E	1.9	1.9
Q304	B	2.4	2.4
	C	5.0	5.0
	E	1.8	1.8
Q305	B	4.3	5.0
	C	0.0	0.0
	E	5.0	5.0
Q306	B	2.4	2.6
	C	5.0	5.0
	E	1.8	2.0
Q307	B	2.5	2.5
	C	5.2	5.2
	E	1.8	2.0
Q309	B	2.5	2.5
	C	0.0	0.0
	E	3.1	3.1
Q311	B	0.7	4.3
	C	3.1	0.0
	E	0.0	0.0

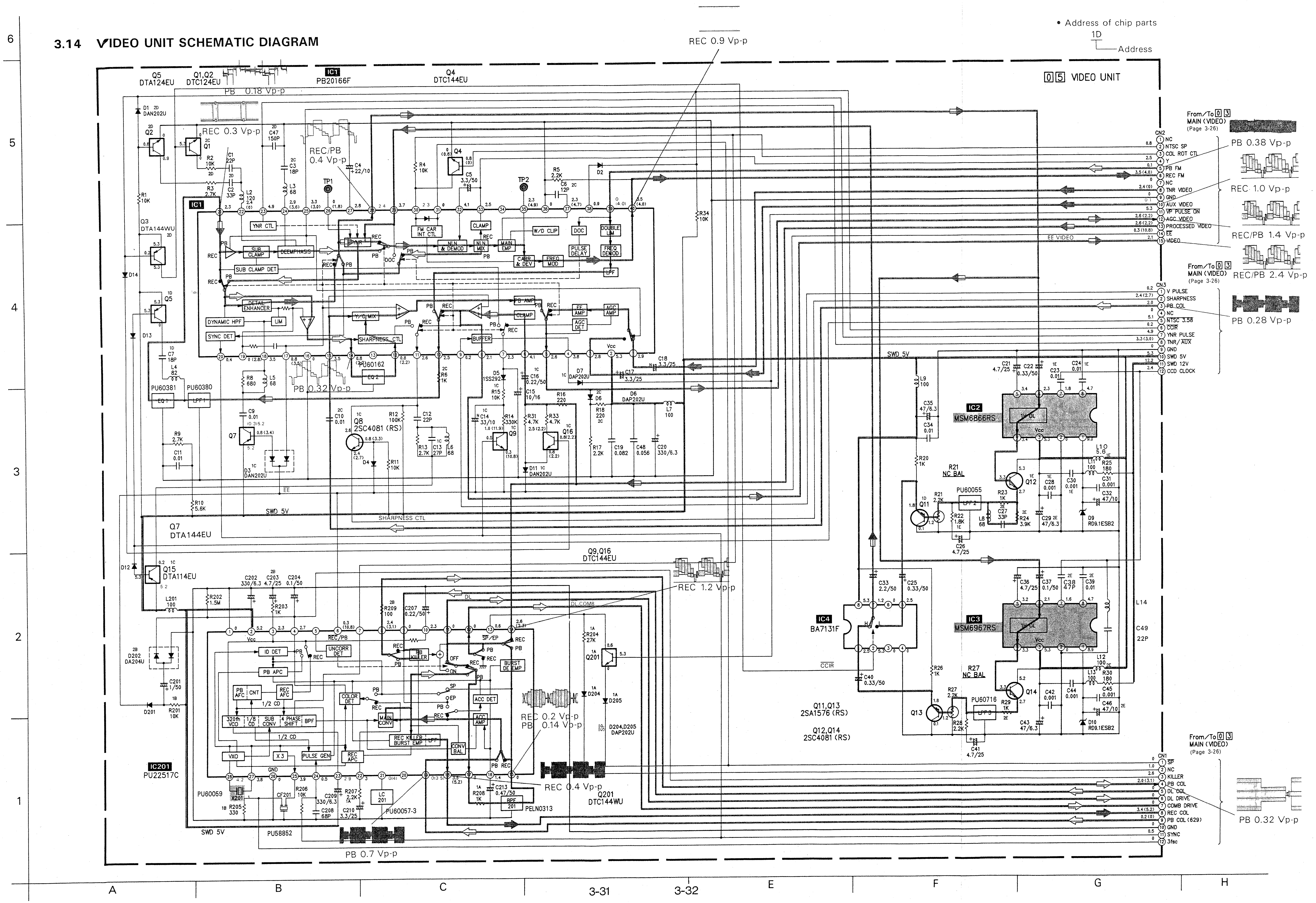
VIDEO & JUMP DET. DC Voltage

2/2

SYMBOL	No.	REC	PB
Q312	B	1.6	1.6
	C	2.7	2.7
	E	1.0	1.0
Q313	B	2.2	2.2
	C	0.0	0.0
	E	2.8	2.8
Q314	B	2.8	2.8
	C	5.1	5.1
	E	2.2	2.2
Q316	B	0.0	0.0
	C	2.6	2.6
	E	0.0	0.0
Q317	B	1.4	1.4
	C	0.0	2.1
	E	0.0	0.0
Q318	B	5.5	5.5
	C	2.7	2.8
	E	0.0	0.0
Q319	B	2.0	2.0
	C	0.0	0.0
	E	2.7	2.8
Q320	B	12.0	12.0
	C	12.0	12.0
	E	2.0	2.0
Q321	B	3.3	0.6
	C	1.0	3.0
	E	1.0	0.6
Q322	B	0.0	0.0
	C	4.1	4.1
	E	0.0	0.0
Q323	B	0.4	0.4
	C	0.0	0.0
	E	0.8	1.0
Q324	B	0.6	0.6
	C	0.0	5.1
	E	5.1	5.1
Q325	B	3.8	5.1
	C	0.0	0.0
	E	5.1	5.1
Q326	B	3.0	3.0
	C	0.0	0.0
	E	5.0	5.0
Q327	B	0.7	0.7
	C	5.2	5.6
	E	0.0	0.0
Q401	B	2.3	2.3
	C	0.1	0.1
	E	2.9	2.9
Q501	B	3.0	3.0
	C	0.0	0.0
	E	3.1	3.1
Q502	B	0.7	0.7
	C	0.1	0.1
	E	0.0	0.0
Q503	B	0.1	3.9
	C	0.1	0.1
	E	0.0	0.0
Q504	B	3.0	3.0
	C	5.0	5.0
	E	2.4	2.4
Q505	B	—	—
	C	1.6	1.6
	E	1.0	1.0
Q506	B	0.1	0.7
	C	0.1	5.0
	E	5.3	5.0
Q509	B	4.2	4.2
	C	0.1	0.1
	E	0.0	0.0
Q510	B	3.1	3.1
	C	2.4	2.4
	E	2.4	2.4
Q611	B	3.7	3.7
	C	0.1	0.1
	E	0.0	0.0
CONNECTOR			
CN1	1	0.0	0.0
	2	1.0	1.0
	3	2.6	2.6
	4	2.6	3.1
	5	0.0	0.0
	6	0.0	0.0
	7	0.0	0.0
	8	3.4	5.2
	9	0.2	0.0
	10	0.0	0.0
	11	0.5	0.5
	12	0.0	0.0
CN2	1	—	—
	2	0.8	0.8
	3	—	—
	4	2.5	2.5
	5	0.1	0.1
	6	3.5	4.0
	7	—	—
	8	2.4	0.0
	9	0.0	0.0
	10	0.1	0.1
	11	5.3	5.3
	12	2.6	2.2
	13	2.6	2.2
	14	0.3	0.8
	15	2.1	2.1
CN3	1	0.2	0.2
	2	2.4	2.7
	3	2.0	2.0
	4	—	—
	5	5.1	5.1
	6	0.2	0.2
	7	4.9	4.9
	8	3.3	3.0
	9	0.0	0.0
	10	5.3	5.3
	11	12.2	12.2
	12	2.4	2.4
CN301	1	0.0	0.0
	2	12.2	12.2
	3	12.2	12.2
	4	5.3	5.3
CN304	1	0.3	0.3
	2	0.0	0.0
	3	0.6	3.9
	4	3.0	3.2
	5	4.0	2.7
	6	0.0	0.0
CN305	1	3.8	3.8
	2	5.0	5.0
	3	—	—
	4		
	5	—	—
	6	5.1	5.1
	7	0.1	12.1
CN307	1	5.1	5.1
	2	0.5	0.5
	3	—	—
	4	0.1	0.1
CN308	1	12.0	12.0
	2	0.0	12.1
	3	0.0	0.0
	4	0.4	0.4
	5	4.1	4.1
	6	0.0	0.0
	7	5.1	4.5
	8	4.1	4.5
	9	0.0	5.2
CN308	10	0.0	0.0
	11	5.3	5.3
	12	5.1	5.1
	13	2.6	2.6
CN309	1	1.7	2.1
	2	0.0	0.0
	3	3.5	3.5
	4	0.1	4.9
	5	0.1	0.1
	6	5.3	5.3
	7	0.5	0.7
	8	0.0	0.0
CN310	1	2.4	2.4
	2	0.0	0.0
CN501	1	5.0	5.0
	2	5.0	5.0
	3	4.1	4.1
	4	—	—
	5	4.6	4.6
	6	0.5	0.5
	7	—	—
	8	4.0	4.0
	9	2.3	2.3
	10	2.5	2.5
	11	3.6	3.6
	12	2.5	2.5
	13	5.0	5.0
	14	0.0	0.0
CN701	1	12.2	12.2
	2	2.4	2.4
	3	0.0	0.0
	4	0.0	0.0
	5	0.0	0.0

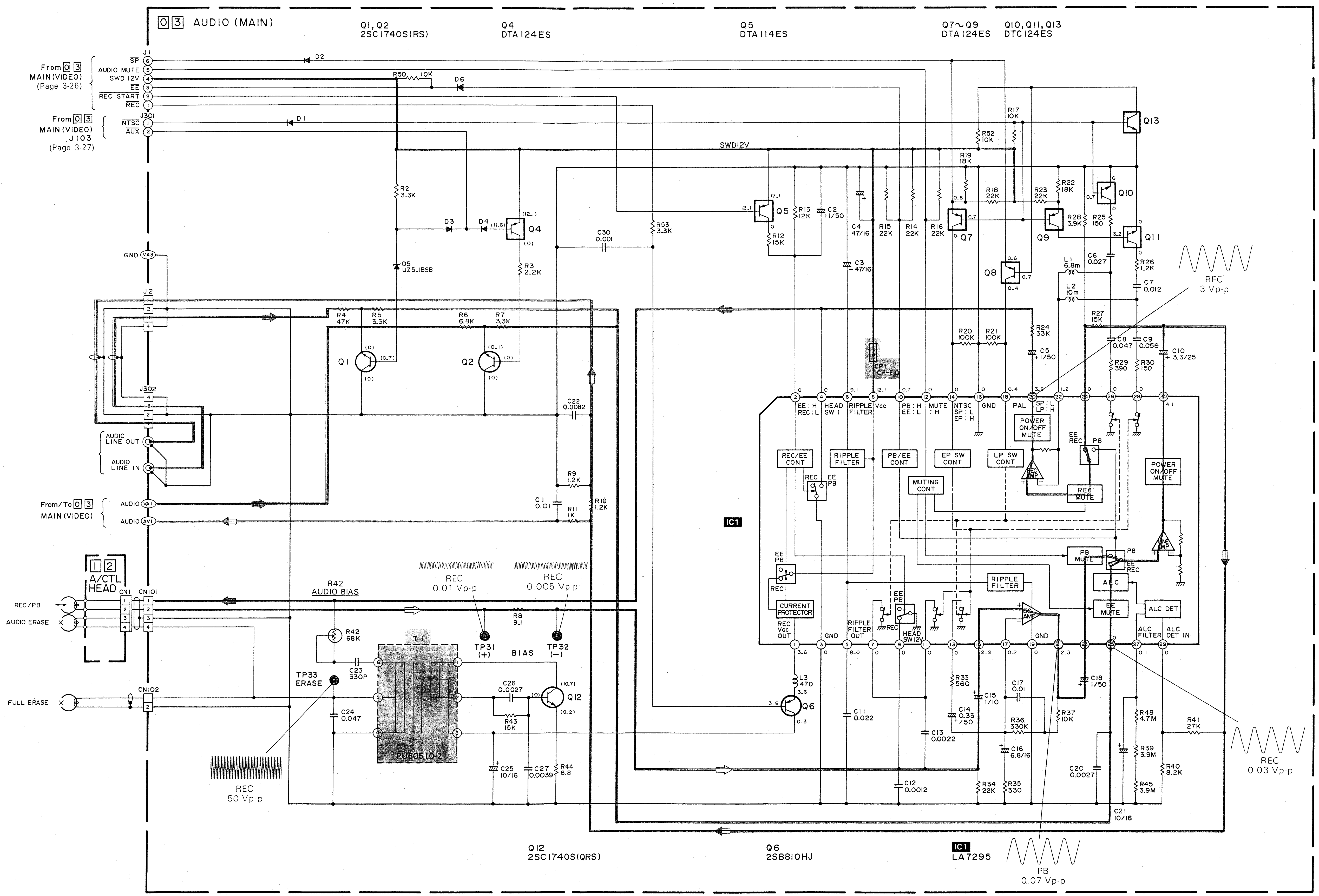
3.14 VIDEO UNIT SCHEMATIC DIAGRAM

• Address of chip parts
1D
Address



REC 0.9 Vp-p
05 VIDEO UNIT
Q5 DTA124EU
Q1,Q2 DTC124EU
IC1 PB20166F
Q4 DTC144EU
PB 0.18 Vp-p
REC 0.3 Vp-p
REC/PB 0.4 Vp-p
TP1
TP2
D1 DAN202U
Q3 DTA144WU
YNR CTL
YNR
SUB CLAMP
DEEMPHASIS
SUB CLAMP DET
FM CAR INT CTL
NLN & DEMOD
NLN MIX
CLAMP
MAIN EMP
W/D CLIP
DOC
PULSE DELAY
DOUBLE LIM
FREQ DEMOD
CARR & DEV
FREQ MOD
LPF
DETAIL ENHANCER
DYNAMIC HPF
LIM
SYNC DET
Y/C MIX
SHARPNESS CTL
PB AMP
BUFFER
EE AMP
AGC AMP
AGC DET
EQ 2
PU60162
PU60381
PU60380
EQ 1
LPF 1
PB 0.32 Vp-p
Q7
Q8 2SC4081 (RS)
Q9
Q16
D3 DAN202U
D4
D5 1SS292
D6 DAP202U
D7 DAP202U
D11 DAN202U
EE
SWD 5V
SHARPNESS CTL
Q7 DTA144EU
Q9,Q16 DTC144EU
Q15 DTA114EU
D12
D13
D14
REC 1.2 Vp-p
DL
DL COMB
ID DET
PB APC
UNCORR DET
PB KILLER
SP/EP
BURST DE EMP
PB AFC
CNT
REC AFC
1/2 CD
320fh VCO
SUB CONV
4 PHASE SHIFT
BPF
COLOR DET
MAIN CONV
ACC DET
ACC AMP
REC KILLER BURST EMP
CONV BAL
VXO
X 3
PULSE GEN
REC APC
LC 201
BPF 201
PELN0313
IC201 PU22517C
PU60059
X201
CF201
PU60057-3
PU58852
D201
D202 DA204U
L201
REC 0.2 Vp-p
PB 0.14 Vp-p
REC 0.4 Vp-p
Q201 DTC144WU
D204
D205
D204,D205 DAP202U
PB 0.7 Vp-p
IC2 MSM6866RS
IC3 MSM6967RS
1H DL
IC4 BA7131F
CCIR
Q11
Q12
Q13
Q14
R21 NC BAL
R27 NC BAL
PU60055
LPF 2
PU60716
LPF 3
D9 RD9.1ESB2
D10 RD9.1ESB2
Q11,Q13 2SA1576 (RS)
Q12,Q14 2SC4081 (RS)
L14
C49 22P
From/To 03 MAIN (VIDEO) (Page 3-26)
CN2
① NC
② NTSC SP
③ COL ROT CTL
④ Y
⑤ PB FM
⑥ REC FM
⑦ NC
⑧ TNR VIDEO
⑨ GND
⑩ AUX VIDEO
⑪ VP PULSE ON
⑫ AGC VIDEO
⑬ PROCESSED VIDEO
⑭ EE
⑮ VIDEO
EE VIDEO
PB 0.38 Vp-p
REC 1.0 Vp-p
REC/PB 1.4 Vp-p
REC/PB 2.4 Vp-p
CN3
① V PULSE
② SHARPNESS
③ PB COL
④ NC
⑤ NTSC 3.58
⑥ CCIR
⑦ YNR PULSE
⑧ TNR/AUX
⑨ GND
⑩ SWD 5V
⑪ SWD 12V
⑫ CCD CLOCK
PB 0.28 Vp-p
CN1
① SP
② NC
③ KILLER
④ PB COL
⑤ DL COL
⑥ DL DRIVE
⑦ COMB DRIVE
⑧ REC COL
⑨ PB COL (629)
⑩ GND
⑪ SYNC
⑫ 3fsc
PB 0.32 Vp-p
6
5
4
3
2
1
A
B
C
D
E
F
G
H

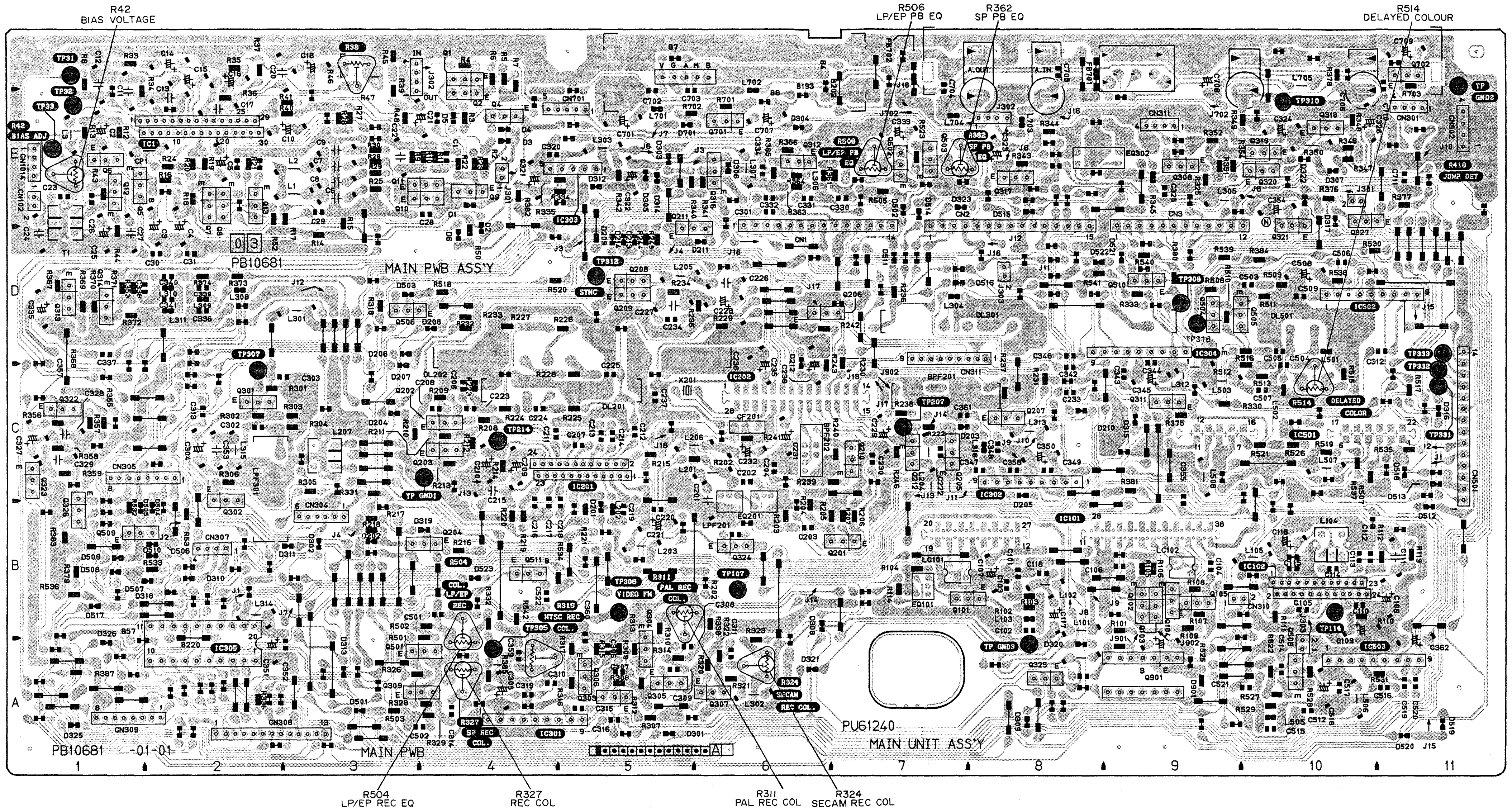
3.15 AUDIO SCHEMATIC DIAGRAM



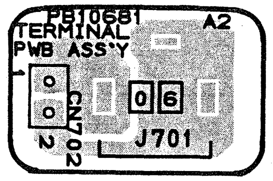
03 AUDIO (MAIN)
Q1, Q2 2SC1740S(RS)
Q4 DTA124ES
Q5 DTA114ES
Q7~Q9 DTA124ES
Q10, Q11, Q13 DTC124ES
From 03 MAIN(VIDEO) (Page 3-26)
J1
SP
AUDIO MUTE
SWD 12V
EE
REC START
REC
From 03 MAIN(VIDEO) J103 (Page 3-27)
J301
NTSC
AUX
D1
D2
D6
R50 10K
SWD12V
R2 3.3K
D3
D4
D5 UZ5.1BSB
Q4
R3 2.2K
C30 0.001
R53 3.3K
Q5
R12 15K
R13 12K
C2 1/50
C4 47/16
C3 47/16
R15 22K
R14 22K
R16 22K
Q7
Q8
R18 22K
R19 18K
R17 10K
R52 10K
R23 22K
R22 18K
Q9
R28 3.9K
R25 150
Q10
Q11
Q13
R26 1.2K
C6 0.027
C7 0.012
L1 6.8m
L2 10m
R27 15K
C8 0.047
C9 0.056
C10 3.3/25
R29 390
R30 150
R20 100K
R21 100K
R24 33K
C5 1/50
CP1 ICP-F10
GND VA3
J2
R4 47K
R5 3.3K
R6 6.8K
R7 3.3K
Q1
Q2
J302
C22 0.0082
AUDIO LINE OUT
AUDIO LINE IN
R9 1.2K
C1 0.01
R11 1K
R10 1.2K
From/To 03 MAIN(VIDEO)
AUDIO VA1
AUDIO AV1
IC1
EE : H REC : L
HEAD SW 1
RIPPLE FILTER
Vcc
PB : H EE : L
MUTE : H
NTSC SP : L EP : H
GND
PAL
SP : L LP : H
POWER ON/OFF MUTE
REC/EE CONT
RIPPLE FILTER
PB/EE CONT
EP SW CONT
LP SW CONT
REC AMP
EE REC PB
REC MUTE
MUTING CONT
PB MUTE
LINE AMP
ALC
EE MUTE
ALC DET
CURRENT PROTECTOR
REC Vcc OUT
GND
RIPPLE FILTER OUT
HEAD SW 12V
EQ AMP
ALC FILTER
ALC DET IN
REC 3 Vp-p
12 A/CTL HEAD
CN1
CN101
REC/PB
AUDIO ERASE
R42 AUDIO BIAS
R42 68K
C23 330P
T1
PU60510-2
TP31 (+)
BIAS
TP32 (−)
REC 0.01 Vp-p
REC 0.005 Vp-p
R8 9.1
TP33 ERASE
C24 0.047
C26 0.0027
R43 15K
Q12
C25 10/16
C27 0.0039
R44 6.8
REC 50 Vp-p
FULL ERASE
CN102
L3 470
Q6
C11 0.022
C12 0.0012
C13 0.0022
R33 560
C15 1/10
C14 0.33/50
C17 0.01
R36 330K
C16 6.8/16
R34 22K
R35 330
R37 10K
C18 1/50
C20 0.0027
R48 4.7M
R39 3.9M
R45 3.9M
R40 8.2K
R41 27K
C21 10/16
REC 0.03 Vp-p
PB 0.07 Vp-p
Q12 2SC1740S(QRS)
Q6 2SB810HJ
IC1 LA7295
6
5
4
3
2
1
A
B
C
D
E
F
G
H

3.16 MAIN (AUDIO/VIDEO), JUMP DET AND VIDEO UNIT CIRCUIT BOARDS

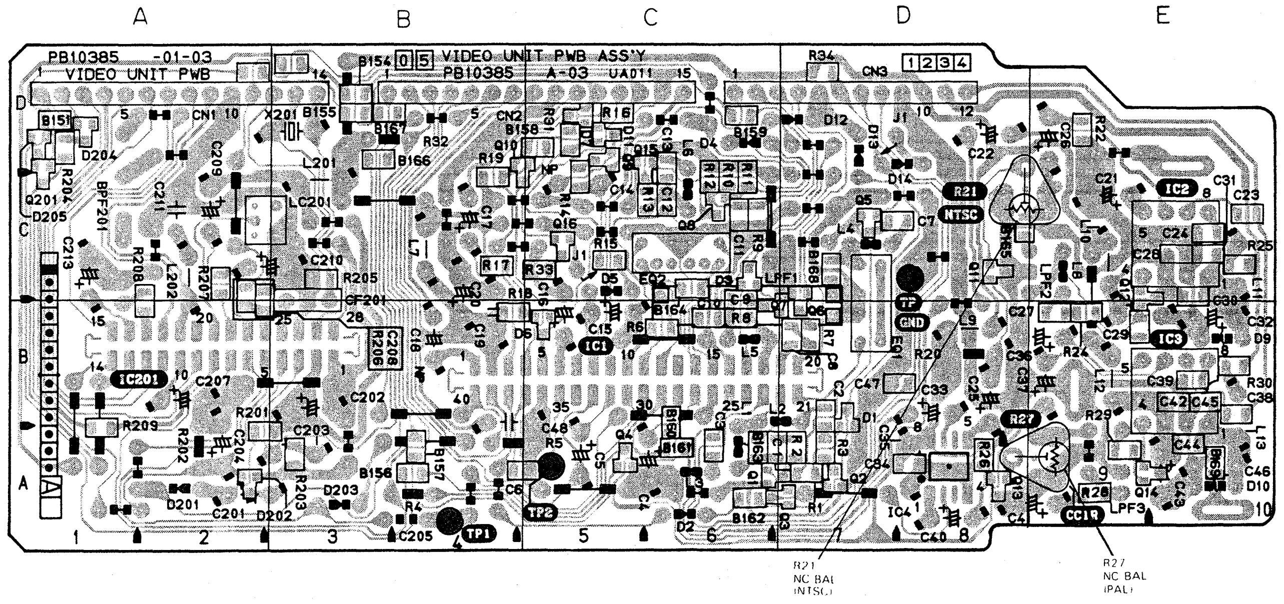
—MAIN—


R42
BIAS VOLTAGE
R506
LP/EP PB EQ
R362
SP PB EQ
R514
DELAYED COLOUR
PB10681
MAIN PWB ASS'Y
PU61240
MAIN UNIT ASS'Y
PB10681 -01-01
MAIN PWB
R504
LP/EP REC EQ
R327
REC COL
R311
PAL REC COL
R324
SECAM REC COL

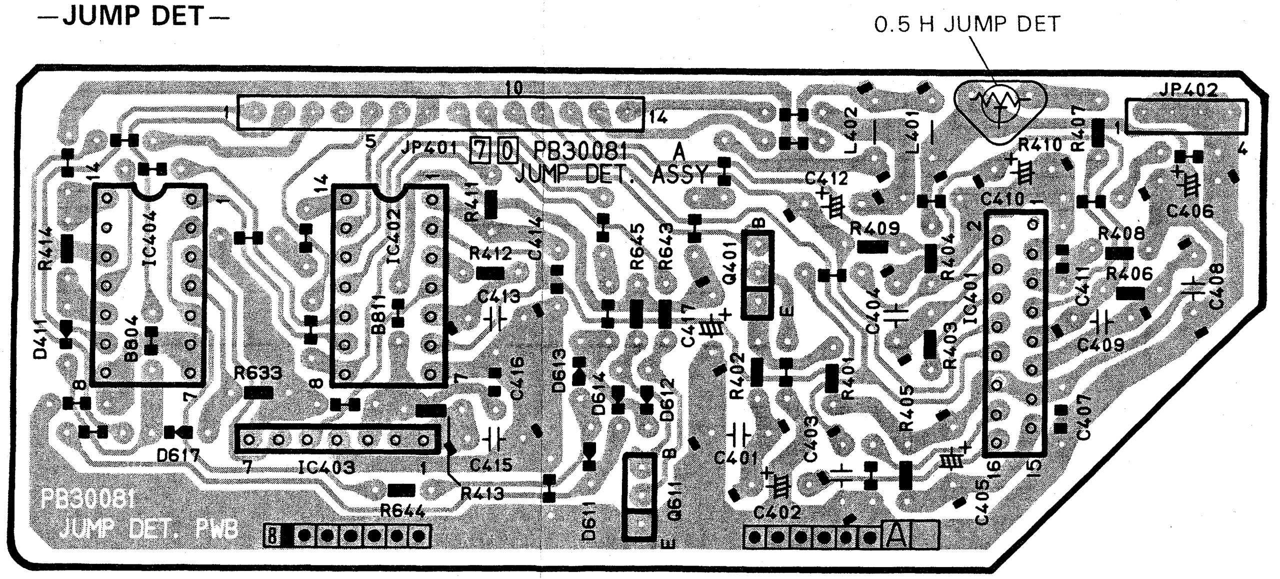
—TERMINAL—


PB10681
TERMINAL
PWB ASS'Y
A2
CN702
J701

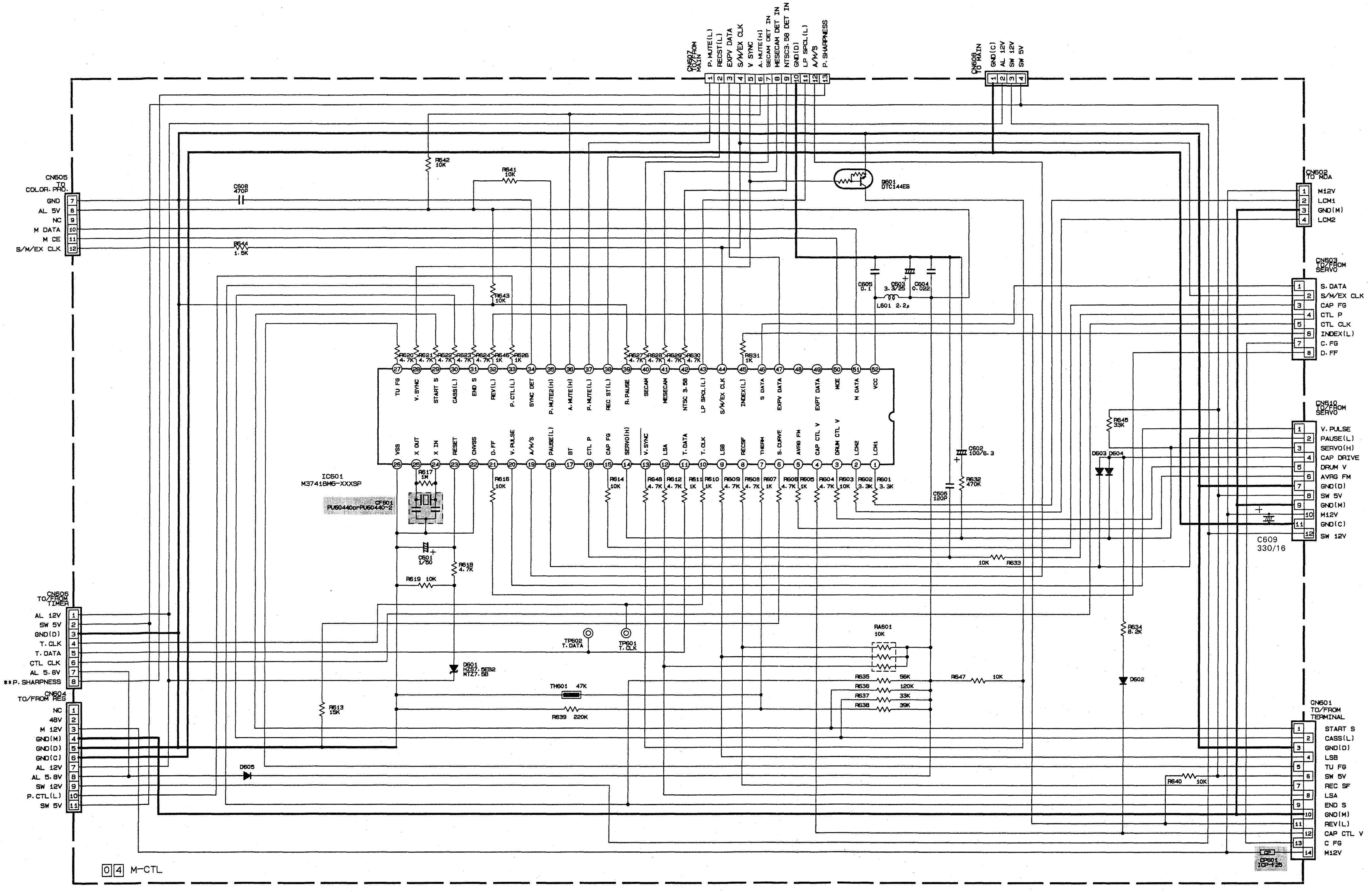
—VIDEO UNIT—


A
B
C
D
E
PB10385 -01-03
VIDEO UNIT PWB
VIDEO UNIT PWB ASS'Y
PB10385 A-03 UA011
R21
NC BAL
(NTSC)
R27
NC BAL
(PAL)

—JUMP DET—


0.5 H JUMP DET
PB30081
JUMP DET. ASS'Y
PB30081
JUMP DET. PWB

3.17 MECHANISM CONTROL SCHEMATIC DIAGRAM


CN607 TO/FROM MAIN
1 P.MUTE(L)
2 RESET(L)
3 EXPV DATA
4 S/M/EX CLK
5 V SYNC
6 A.MUTE(H)
7 SECAM DET IN
8 MESECAM DET IN
9 NTSC3.58 DET IN
10 GND(D)
11 LP SPDL(L)
12 A/V/S
13 P.SHARPNESS
CN608 TO MDA
1 GND(C)
2 AL 12V
3 SW 12V
4 SW 5V
CN605 TO COLOR.PRO.
7 GND
8 AL 5V
9 NC
10 M DATA
11 M CE
12 S/M/EX CLK
CN606 TO/FROM TIMER
1 AL 12V
2 SW 5V
3 GND(D)
4 T.CLK
5 T.DATA
6 CTL CLK
7 AL 5.8V
8 **P.SHARPNESS
CN604 TO/FROM REG
1 NC
2 48V
3 M 12V
4 GND(M)
5 GND(D)
6 GND(C)
7 AL 12V
8 AL 5.8V
9 SW 12V
10 P.CTL(L)
11 SW 5V
CN602 TO MDA
1 M12V
2 LCM1
3 GND(M)
4 LCM2
CN603 TO/FROM SERVO
1 S.DATA
2 S/M/EX CLK
3 CAP FG
4 CTL P
5 CTL CLK
6 INDEX(L)
7 C.FG
8 D.FF
CN610 TO/FROM SERVO
1 V.PULSE
2 PAUSE(L)
3 SERVO(H)
4 CAP DRIVE
5 DRUM V
6 AVRG FM
7 GND(D)
8 SW 5V
9 GND(M)
10 M12V
11 GND(C)
12 SW 12V
CN601 TO/FROM TERMINAL
1 START S
2 CASS(L)
3 GND(D)
4 LSB
5 TU FG
6 SW 5V
7 REC SF
8 LSA
9 END S
10 GND(M)
11 REV(L)
12 CAP CTL V
13 C FG
14 M12V
IC601 M37418M6-XXXSP
27 TU FG
28 V.SYNC
29 START S
30 CASS(L)
31 END S
32 REV(L)
33 P.CTL(L)
34 SYNC DET
35 P.MUTE2(H)
36 A.MUTE(H)
37 P.MUTE(L)
38 REC ST(L)
39 R.PAUSE
40 SECAM
41 MESECAM
42 NTSC 3.58
43 LP SPDL(L)
44 S/M/EX CLK
45 INDEX(L)
46 S DATA
47 EXPV DATA
48
49 EXPT DATA
50 MCE
51 M DATA
52 VCC
26 VSS
25 X OUT
24 X IN
23 RESET
22 CNVSS
21 D.FF
20 V.PULSE
19 A/V/S
18 PAUSE(L)
17 BT
16 CTL P
15 CAP FG
14 SERVO(H)
13 V.SYNC
12 LSA
11 T.DATA
10 T.CLK
9 LSB
8 RECSF
7 THERM
6 S.CURVE
5 AVRG FM
4 CAP CTL V
3 DRUM CTL V
2 LCM2
1 LCM1
R620 4.7K
R621 4.7K
R622 4.7K
R623 4.7K
R624 4.7K
R646 1K
R626 1K
R627 4.7K
R628 4.7K
R629 4.7K
R630 4.7K
R631 1K
R642 10K
R641 10K
R643 10K
R644 1.5K
C608 470P
Q601 DTC144ES
C605 0.1
C603 3.3/25
C604 0.022
L601 2.2μ
C602 100/6.3
R632 470K
C606 120P
R645 33K
D603 D604
CF601 PU60440 or PU60440-2
R617 1M
C601 1/50
R618 4.7K
R619 10K
R615 10K
R614 10K
R648 4.7K
R612 4.7K
R611 1K
R610 1K
R609 4.7K
R608 4.7K
R607 1K
R606 4.7K
R605 1K
R604 4.7K
R603 10K
R602 3.3K
R601 3.3K
R633 10K
C609 330/16
RA601 10K
R635 56K
R636 120K
R637 33K
R638 39K
R647 10K
R634 8.2K
D602
TP602 T.DATA
TP601 T.CLK
D601 HZS7.5EB2 MTZ7.5B
TH601 47K
R639 220K
R613 15K
D605
R640 10K
CP601 ICP-F25
04 M-CTL

NOTES: UNLESS OTHERWISE SPECIFIED
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDECTANCE VALUES ARE IN H
ALL CAPACITANCE VALUES ARE IN μF.

⊣⊦ ELECTROLYTIC

⊣⊢ CERAMIC

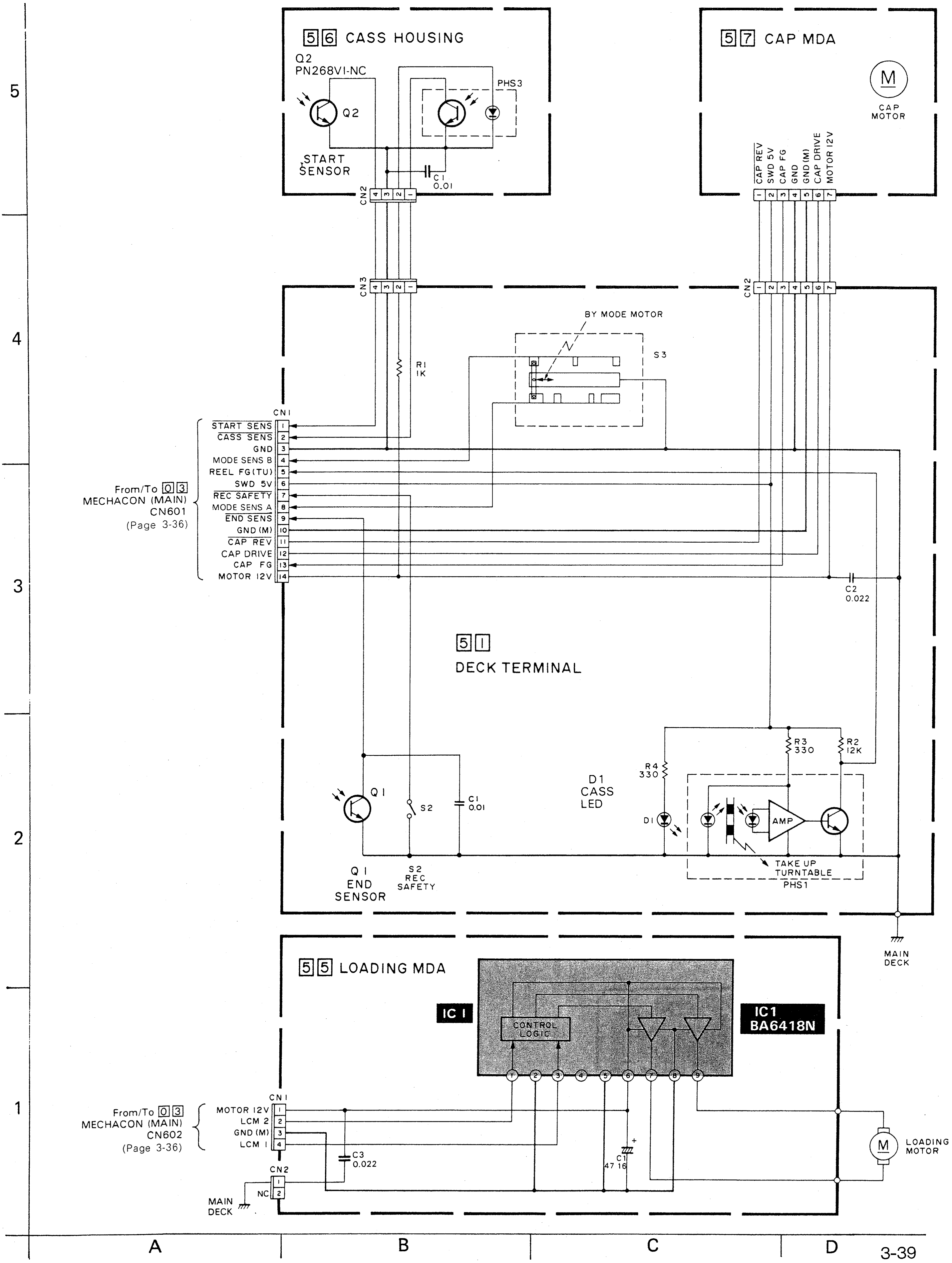
ALL DIODES ARE 1SS133 OR MA165.

MECHACON DC Voltage

SYMBOL	No.	REC	PB
INTEGRATED CIRCUIT			
IC601	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52	0.0 0.0 2.4 1.4 0.0 1.3 1.0 0.0 5.0 5.0 — 0.0 0.0 5.2 2.6 5.3 4.1 2.1 5.0 0.0 4.6 0.0 4.9 2.2 1.6 0.0 — 4.1 4.8 0.0 4.9 3.3 0.2 0.2 4.8 0.0 12.0 0.0 0.0 5.0 4.4 0.0 5.3 0.4 5.2 0.0 0.0 0.0 0.0 0.0 0.0 5.0	0.0 0.0 2.8 1.4 3.8 0.0 4.9 0.0 5.0 5.0 — 0.0 0.0 5.2 2.6 3.3 4.1 4.9 5.0 0.0 0.9 0.0 4.9 2.2 1.6 0.0 — 4.1 4.8 0.0 4.9 3.3 0.0 1.7 4.3 0.0 5.8 5.8 0.0 4.0 4.0 2.8 5.3 0.4 5.2 0.0 0.2 0.0 0.0 0.0 0.0 5.0
TRANSISTOR			
Q610	B C E	4.1 0.0 0.0	4.1 0.0 0.0
CONNECTOR			
CN601	1 2 3 4 5 6 7 8 9 10 11 12 13 14	4.8 0.1 0.0 5.0 — 5.3 0.0 0.0 4.9 0.0 3.2 1.4 2.6 11.9	1.7 0.1 0.0 5.0 — 5.3 0.0 0.0 4.5 0.0 3.2 1.4 2.6 11.9

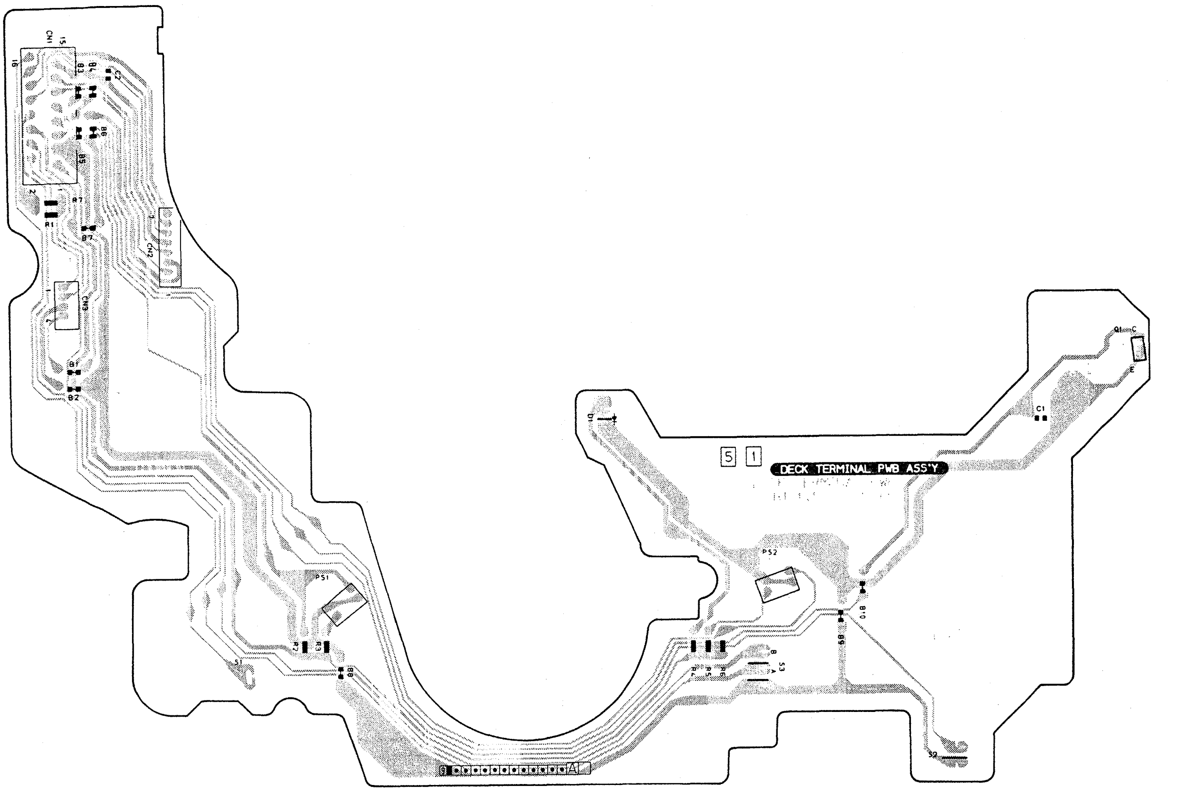
SYMBOL	No.	REC	PB
CN602	1 2 3 4	11.9 12.2 12.2 5.3	11.9 12.2 12.2 5.3
CN603	1 2 3 4 5 6 7 8	0.0 0.4 2.6 5.3 0.0 5.3 2.6 —	0.0 0.4 2.6 5.3 0.0 5.3 2.6 —
CN604	2 3 4 5 6 7 8 9 10 11	47.5 12.0 0.0 0.0 0.0 12.1 5.7 12.1 3.6 5.3	47.0 12.0 0.0 0.0 0.0 12.1 5.7 12.1 3.6 5.3
CN605	7 8 9 10 11 12	0.0 5.0 0.1 0.0 0.0 0.4	0.0 5.0 0.0 0.0 0.0 0.4
CN606	1 2 3 4 5 6 7 8	12.1 5.3 0.0 3.9 4.5 0.5 5.6 2.6	12.1 5.3 0.0 4.6 4.5 0.5 5.6 2.6
CN607	1 2 3 4 5 6 7 8 9 10 11 12 13	12.0 0.0 0.0 0.4 4.1 0.0 5.1 4.4 0.0 0.0 5.3 5.1 2.6	12.0 12.1 0.0 0.4 4.1 0.0 4.5 4.5 5.2 0.0 5.3 5.1 2.6
CN608	1 2 3 4	0.0 12.2 12.2 5.3	0.0 12.2 12.2 5.3
CN610	1 2 3 4 5 6 7 8 9 10 11 12	0.0 2.1 5.3 1.8 2.4 0.0 0.0 0.0 0.0 12.0 0.0 12.1	0.0 2.1 5.3 1.8 2.4 3.1 0.0 5.3 0.0 0.0 0.0 0.0

3.18 DECK TERMINAL, CASSETTE HOUSING, CAPSTAN MDA AND LOADING MDA SCHEMATIC DIAGRAMS

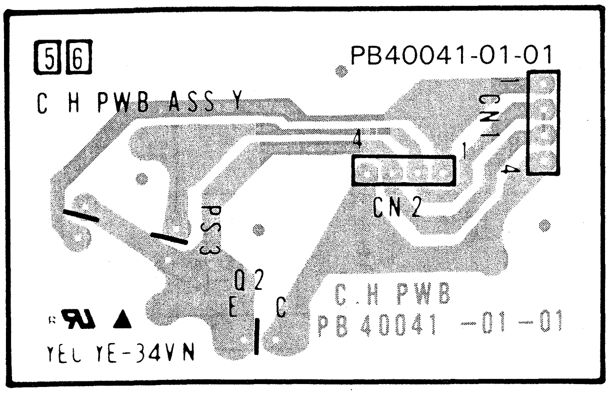

56 CASS HOUSING
Q2
PN268VI-NC
Q2
PHS3
START SENSOR
C1
0.01
CN2
57 CAP MDA
M
CAP MOTOR
CAP REV
SWD 5V
CAP FG
GND
GND (M)
CAP DRIVE
MOTOR 12V
CN3
CN2
BY MODE MOTOR
S3
R1
1K
CN1
START SENS
CASS SENS
GND
MODE SENS B
REEL FG(TU)
SWD 5V
REC SAFETY
MODE SENS A
END SENS
GND (M)
CAP REV
CAP DRIVE
CAP FG
MOTOR 12V
From/To 03
MECHACON (MAIN)
CN601
(Page 3-36)
C2
0.022
51
DECK TERMINAL
R3
330
R2
12K
R4
330
D1
CASS
LED
D1
Q1
S2
C1
0.01
AMP
TAKE UP
TURNTABLE
PHS1
Q1
END
SENSOR
S2
REC
SAFETY
MAIN
DECK
55 LOADING MDA
IC1
CONTROL
LOGIC
IC1
BA6418N
From/To 03
MECHACON (MAIN)
CN602
(Page 3-36)
CN1
MOTOR 12V
LCM 2
GND (M)
LCM 1
C3
0.022
C1
47 16
CN2
NC
MAIN
DECK
M
LOADING
MOTOR
5
4
3
2
1
A
B
C
D

3.19 DECK TERMINAL, LOADING MDA, CASSETTE HOUSING AND A/CTL HEAD CIRCUIT BOARDS

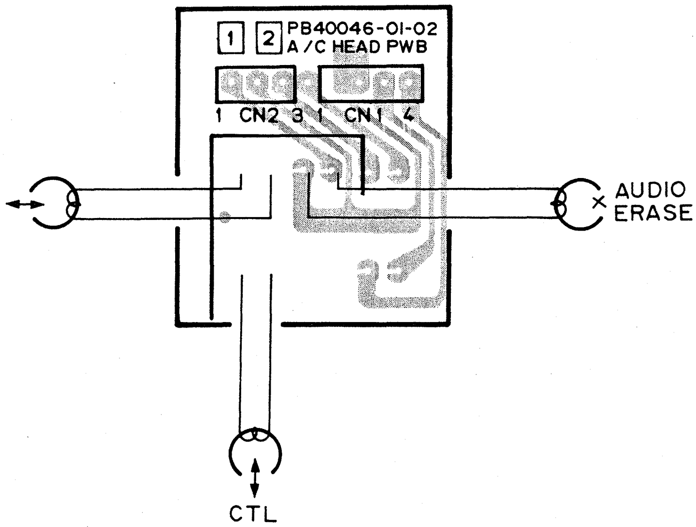
—DECK TERMINAL—


CN1
B3
B4
C2
B5
B6
R7
R1
B7
CN2
CN3
B1
B2
D1
5
1
DECK TERMINAL PWB ASS'Y
Q1
C
E
C1
PS1
PS2
B10
B9
B8
S1
S2
S3
R2
R3
R4
R5
R6

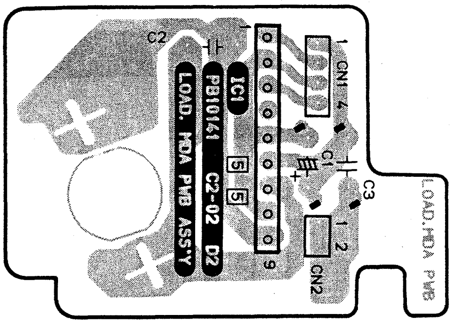
—CASSETTE HOUSING—


5
6
PB40041-01-01
C H PWB ASS'Y
CN1
1
4
CN2
4
1
PS3
Q2
E
C
C.H PWB
PB 40041 -01-01
YEC YE-34VN

—A/CTL HEAD—


1
2
PB40046-01-02
A/C HEAD PWB
1
CN2
3
1
CN1
4
AUDIO
ERASE
CTL

—LOADING MDA—


C2
IC1
PB10141
C2-02
D2
LOAD. MDA PWB ASS'Y
5
5
1
CN1
4
C1
C3
1
2
CN2
9
LOAD.MDA PWB

6

3.20 MECHANISM CONTROL CIRCUIT BOARD

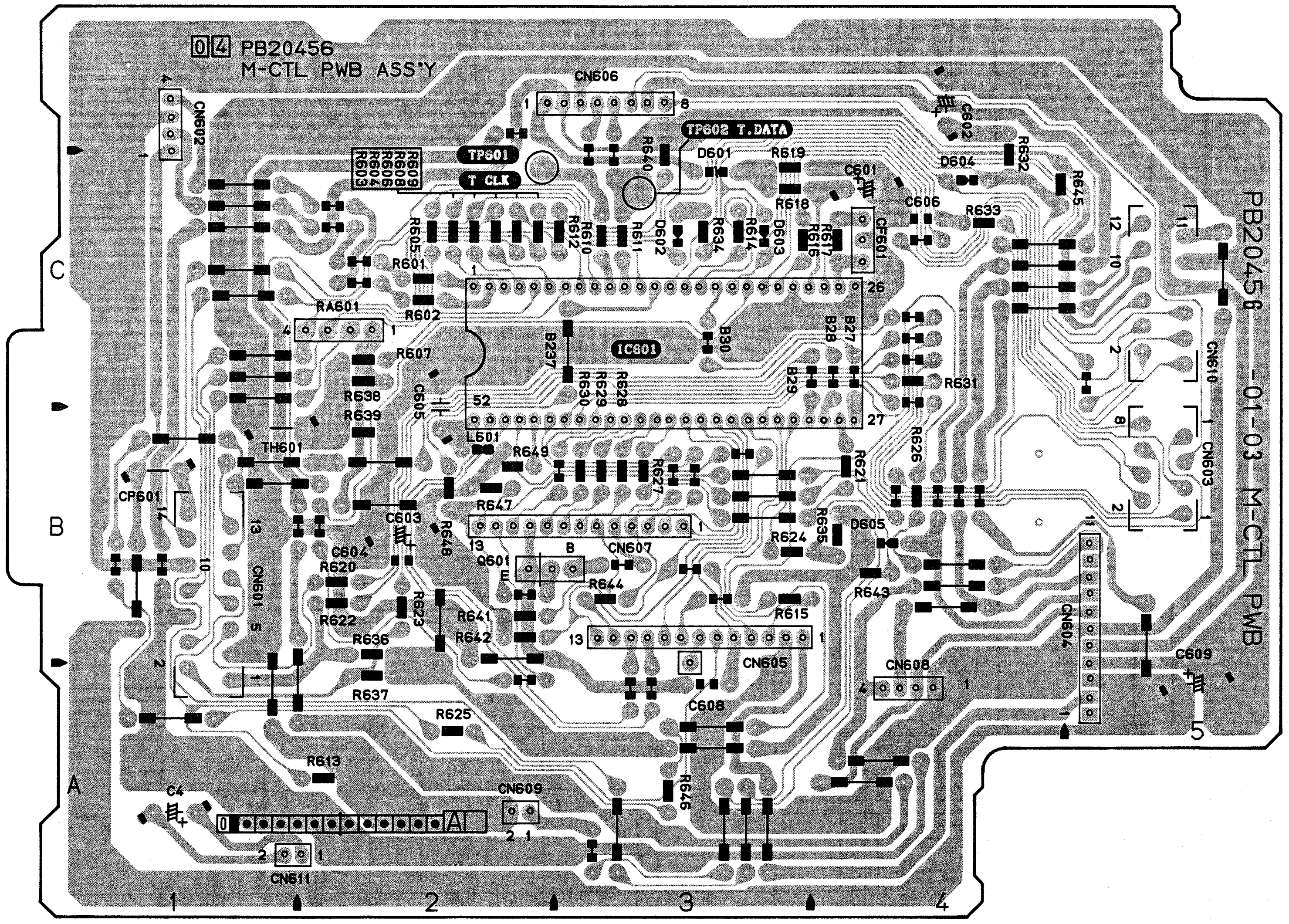
5

4

3

2

1



04 PB20456
M-CTL PWB ASS'Y
PB20456 -01-03 M-CTL PWB
CN606
TP602 T.DATA
TP601
T CLK
IC601
CN602
CN601
CN603
CN604
CN605
CN607
CN608
CN609
CN610
CN611
RA601
TH601
CP601
CF601
Q601
L601
C4
C601
C602
C603
C604
C605
C606
C608
C609
D601
D602
D603
D604
D605
R601
R602
R603
R604
R605
R606
R607
R608
R609
R610
R611
R612
R613
R614
R615
R616
R617
R618
R619
R620
R621
R622
R623
R624
R625
R626
R627
R628
R629
R630
R631
R632
R633
R634
R635
R636
R637
R638
R639
R640
R641
R642
R643
R644
R645
R646
R647
R648
R649
B27
B28
B29
B30
B237
A
B
C
1
2
3
4
5

A	B	C	3-41	3-42	E	F	G	H

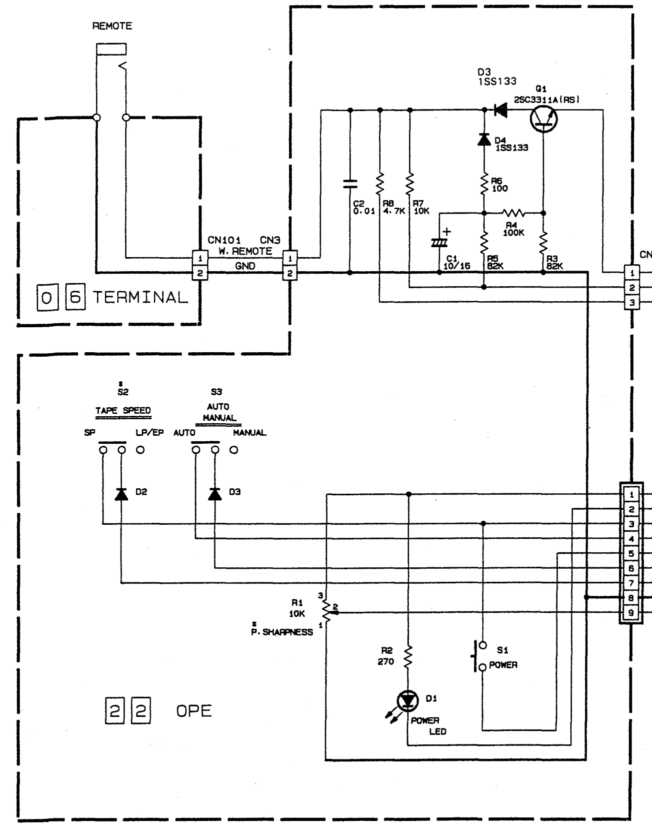
3.21 TIMER/DISPLAY/SWITCH AND OPERATION SCHEMATIC DIAGRAMS

TIMER/DISPLAY/SW DC Voltage

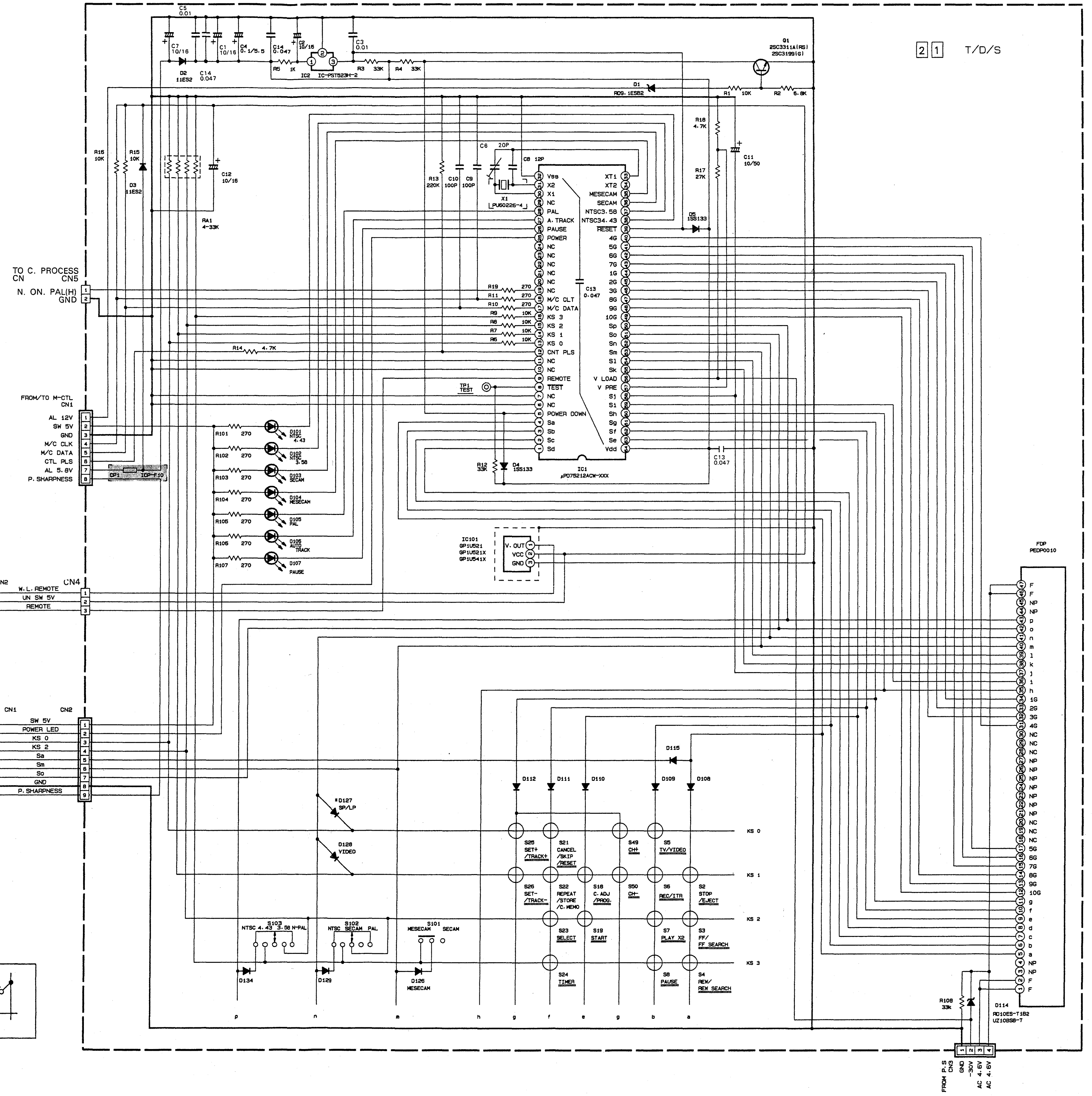
SYMBOL	No.	REC	PB
INTEGRATED CIRCUIT			
IC1	1	-29.1	-29.1
	2	4.8	4.8
	3	4.8	4.8
	4	-29.1	-29.1
	5	0.0	0.0
	6	0.0	0.0
	7	0.0	0.0
	8	5.0	5.0
	9	4.6	4.6
	10	0.0	0.0
	11	0.0	0.0
	12	5.0	5.0
	13	0.0	0.0
	14	0.0	0.0
	15	0.0	0.0
	16	0.0	0.0
	17	—	—
	18	—	—
	19	—	—
	20	—	—
	21	—	—
	22	—	—
	23	—	—
	24	—	—
	25	0.3	0.3
	26	5.0	5.0
	27	0.2	0.2
	28	0.2	0.2
	29	—	—
	30	2.4	2.4
	31	2.5	2.5
	32	0.0	0.0
	33	0.0	0.0

SYMBOL	No.	REC	PB
	34	—	—
	35	5.0	5.0
	36	5.0	5.0
	37	5.0	5.0
	38	5.0	5.0
	39	5.0	5.0
	40	-29.1	-29.1
	41	-29.1	-29.1
	42	-29.1	-29.1
	43	4.6	4.6
	44	-29.1	-29.1
	45	-29.1	-29.1
	46	-29.1	-29.1
	47	-29.1	-29.1
	48	-29.1	-29.1
	49	-29.1	-29.1
	50	-29.0	-29.0
	51	-29.0	-29.0
	52	-29.0	-29.0
	53	-29.0	-29.0
	54	-29.0	-29.0
	55	-29.0	-29.0
	56	-29.3	-29.3
	57	-4.4	-4.4
	58	-29.1	-29.1
	59	-29.1	-29.1
	60	-29.1	-29.1
	61	-29.1	-29.1
	62	-29.1	-29.1
	63	-29.1	-29.1
	64	5.0	5.0
IC2	1	4.9	4.9
	2	0.0	0.0
	3	4.9	4.9

SYMBOL	No.	REC	PB
TRANSISTOR			
Q1	B	0.6	0.6
	C	0.0	0.0
	E	0.0	0.0
CONNECTOR			
CN1	1	12.1	12.1
	2	5.3	5.3
	3	0.0	0.0
	4	2.8	2.8
	5	0.0	0.0
	6	5.0	5.0
	7	5.6	5.6
	8	2.6	2.6
CN2	1	5.3	5.3
	2	0.2	0.2
	3	0.0	0.0
	4	0.0	0.0
	5	0.0	0.0
	6	-28.1	-28.1
	7	-27.9	-27.9
	8	0.0	0.0
	9	2.6	2.6
CN3	1	-28.9	-28.9
	2	—	—
	3	—	—
	4	-20.0	-20.0



REMOTE
06 TERMINAL
CN101
W. REMOTE
GND
CN3
D3 1SS133
Q1 2SC3311A(RS)
D4 1SS133
R6 100
R4 100K
C2 0.01
R8 4.7K
R7 10K
C1 10/16
R5 68K
R3 82K
CN2
*S2 TAPE SPEED
SP LP/EP
S3 AUTO MANUAL
AUTO MANUAL
D2
D3
R1 10K
*P. SHARPNESS
R2 270
S1 POWER
D1 POWER LED
22 OPE
CN1



21 T/D/S
TO C. PROCESS CN CN5
N. ON. PAL(H)
GND
FROM/TO M-CTL CN1
AL 12V
SW 5V
GND
M/C CLK
M/C DATA
CTL PLS
AL 5.8V
P. SHARPNESS
CP1 ICP-F10
CN2
CN4
W.L. REMOTE
UN SW 5V
REMOTE
CN1
CN2
SW 5V
POWER LED
KS 0
KS 2
Sa
Sm
So
GND
P. SHARPNESS
C5 0.01
C7 10/16
C1 10/16
C4 0.1/5.5
C14 0.047
C2 10/16
C3 0.01
D2 1ES2
C14 0.047
R5 1K
IC2 IC-PST523H-2
R3 33K
R4 33K
Q1 2SC3311A(RS) 2SC3199(G)
D1 RD9.1ESB2
R1 10K
R2 6.8K
R18 4.7K
R17 27K
C11 10/50
D5 1SS133
R16 10K
R15 10K
D3 1ES2
C12 10/16
RA1 4-33K
R13 220K
C10 100P
C9 100P
C6 20P
C8 12P
X1 PU60226-4
Vss
X2
X1
NC
PAL
A. TRACK
PAUSE
POWER
NC
NC
NC
NC
NC
NC
M/C CLT
M/C DATA
KS 3
KS 2
KS 1
KS 0
CNT PLS
NC
NC
REMOTE
TEST
NC
NC
POWER DOWN
Sa
Sb
Sc
Sd
XT1
XT2
MESECAM
SECAM
NTSC3.58
NTSC34.43
RESET
4G
5G
6G
7G
1G
2G
3G
8G
9G
10G
Sp
So
Sn
Sm
S1
Sk
V LOAD
V PRE
Sj
Si
Sh
Sg
Sf
Se
Vdd
C13 0.047
R19 270
R11 270
R10 270
R9 10K
R8 10K
R7 10K
R6 10K
R14 4.7K
TP1 TEST
R12 33K
D4 1SS133
IC1 μPD75212ACW-XXX
C13 0.047
R101 270
R102 270
R103 270
R104 270
R105 270
R106 270
R107 270
D101 NTSC 4.43
D102 NTSC 3.58
D103 SECAM
D104 MESECAM
D105 PAL
D106 AUTO TRACK
D107 PAUSE
IC101 GP1U521 GP1U521X GP1U541X
V. OUT
VCC
GND
FDP PEDP0010
*D127 SP/LP
D128 VIDEO
D112
D111
D110
D109
D108
D115
S25 SET+ /TRACK+
S21 CANCEL /SKIP /RESET
S49 CH+
S5 TV/VIDEO
S26 SET- /TRACK-
S22 REPEAT /STORE /C. MEMO
S18 C. ADJ /PROG.
S50 CH-
S6 REC/ITR
S2 STOP /EJECT
S23 SELECT
S19 START
S7 PLAY X2
S3 FF/ FF SEARCH
S24 TIMER
S8 PAUSE
S4 REW/ REW SEARCH
KS 0
KS 1
KS 2
KS 3
S103 NTSC 4.43 3.58 N-PAL
S102 NTSC SECAM PAL
S101 MESECAM SECAM
D134
D129
D126 MESECAM
p
n
m
h
g
f
e
g
b
a
R108 33K
D114 RD10ES-T1B2 UZ10BSB-T
FROM P.S CN3
GND
-30V
AC 4.6V
AC 4.6V

NOTES: UNLESS OTHERWISE SPECIFIED

ALL RESISTANCE VALUES ARE IN OHMS.

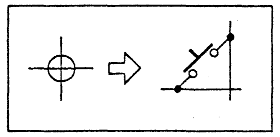
ALL CAPACITANCE VALUES ARE IN μF.

ELECTROLYTIC

CERAMIC

ALL DIODE ARE 1SS132.

TACT SW

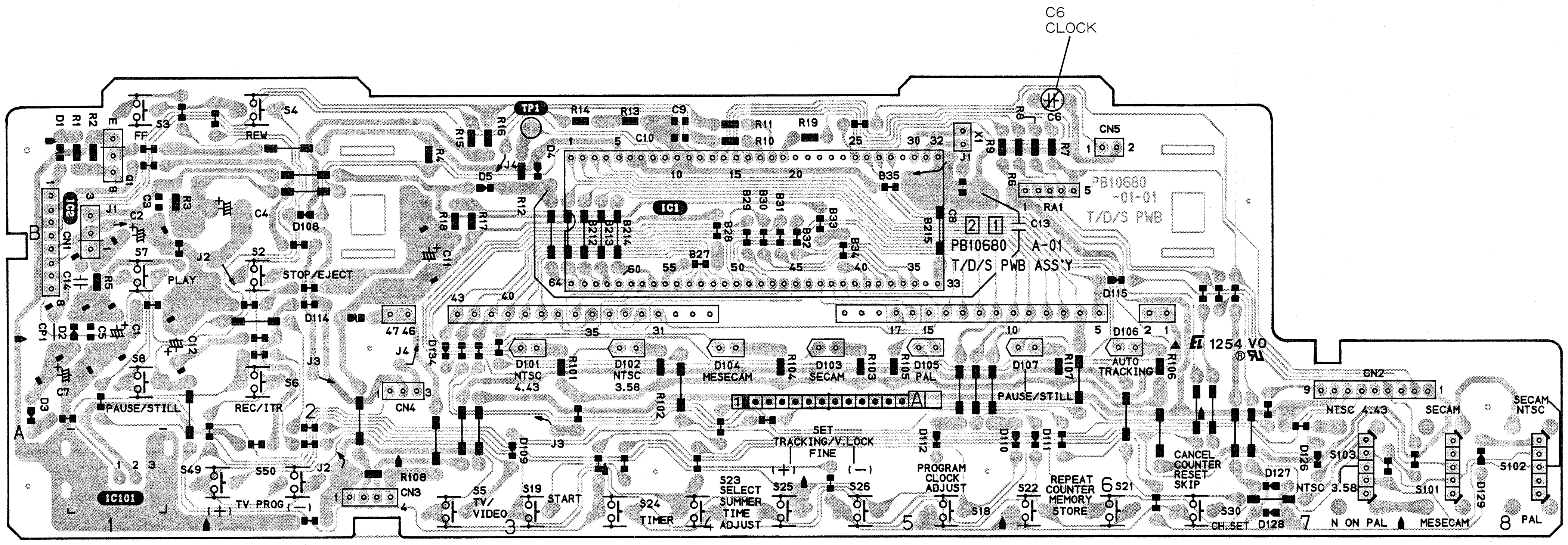


6

3.22 TIMER/DISPLAY/SWITCH AND OPERATION CIRCUIT BOARDS

5

–TIMER/DISPLAY/SWITCH–

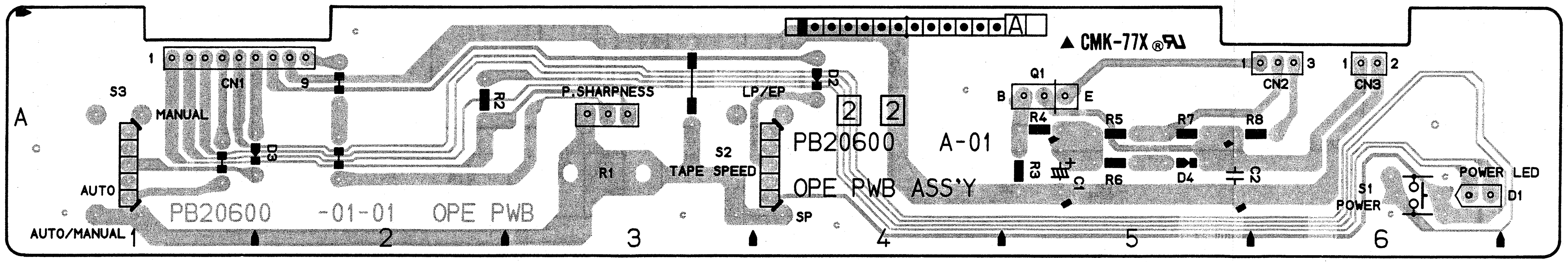

C6
CLOCK
TP1
IC1
IC2
IC101
PB10680
-01-01
T/D/S PWB
PB10680 A-01
T/D/S PWB ASS'Y
CN1
CN2
CN3
CN4
CN5
S3 FF
S4 REW
S7 PLAY
S2 STOP/EJECT
S8 PAUSE/STILL
S6 REC/ITR
S49
S50
TV PROG
(+)
(–)
S5 TV/VIDEO
S19 START
S24 TIMER
S23 SELECT SUMMER TIME ADJUST
S25
S26
SET
TRACKING/V.LOCK
FINE
PROGRAM CLOCK ADJUST
S18
S22
REPEAT COUNTER MEMORY STORE
S21
CANCEL COUNTER RESET SKIP
S30 CH.SET
D101 NTSC 4.43
D102 NTSC 3.58
D104 MESECAM
D103 SECAM
D105 PAL
D107
PAUSE/STILL
D106
AUTO TRACKING
1254 VO
NTSC 4.43
SECAM
SECAM NTSC
S103
S101
S102
NTSC 3.58
N ON PAL
MESECAM
PAL
D127
D128
D129
D126
R108
J1
J2
J3
J4
X1
RA1
A
B
1
2
3
4
5
6
7
8

4

3

–OPERATION–

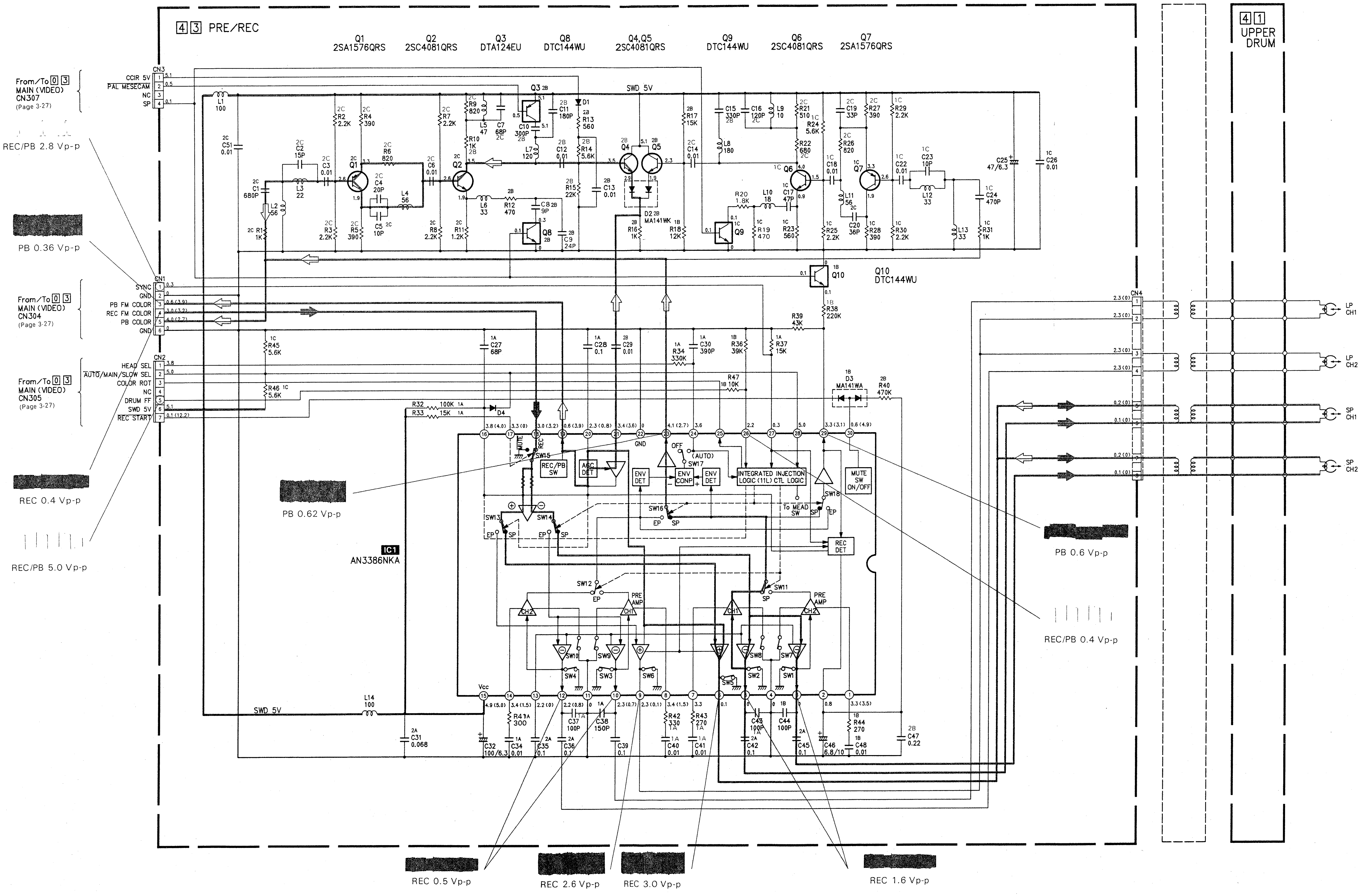
2


CMK-77X
CN1
S3
MANUAL
AUTO
AUTO/MANUAL
PB20600 -01-01 OPE PWB
P.SHARPNESS
R1
R2
D2
D3
LP/EP
S2
TAPE SPEED
SP
PB20600 A-01
OPE PWB ASS'Y
Q1
B
E
R3
R4
R5
R6
R7
R8
C1
C2
D4
CN2
CN3
S1
POWER
POWER LED
D1
A
1
2
3
4
5
6

1

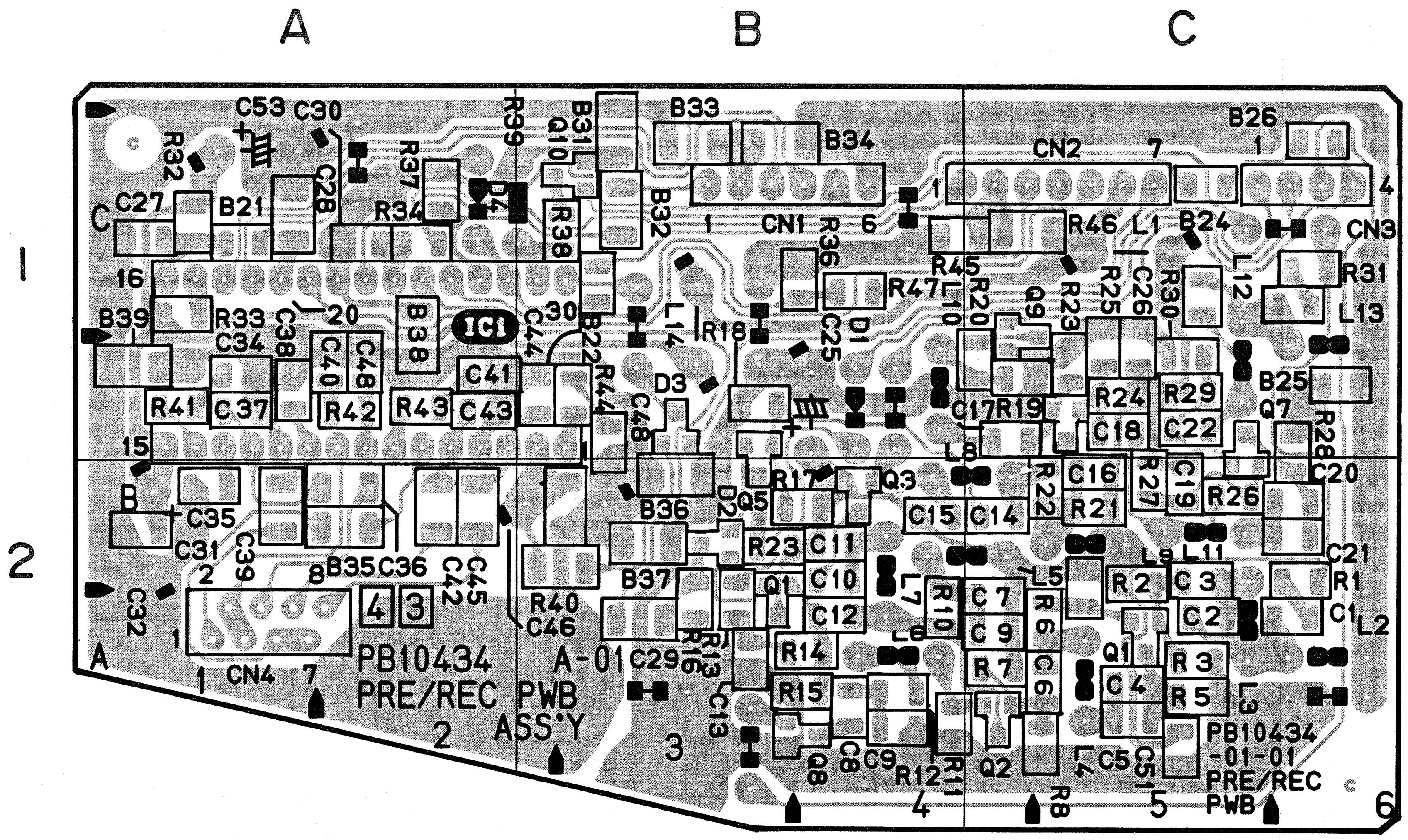
3.23 PRE/REC SCHEMATIC DIAGRAM

• Address of chip parts
1D
Address

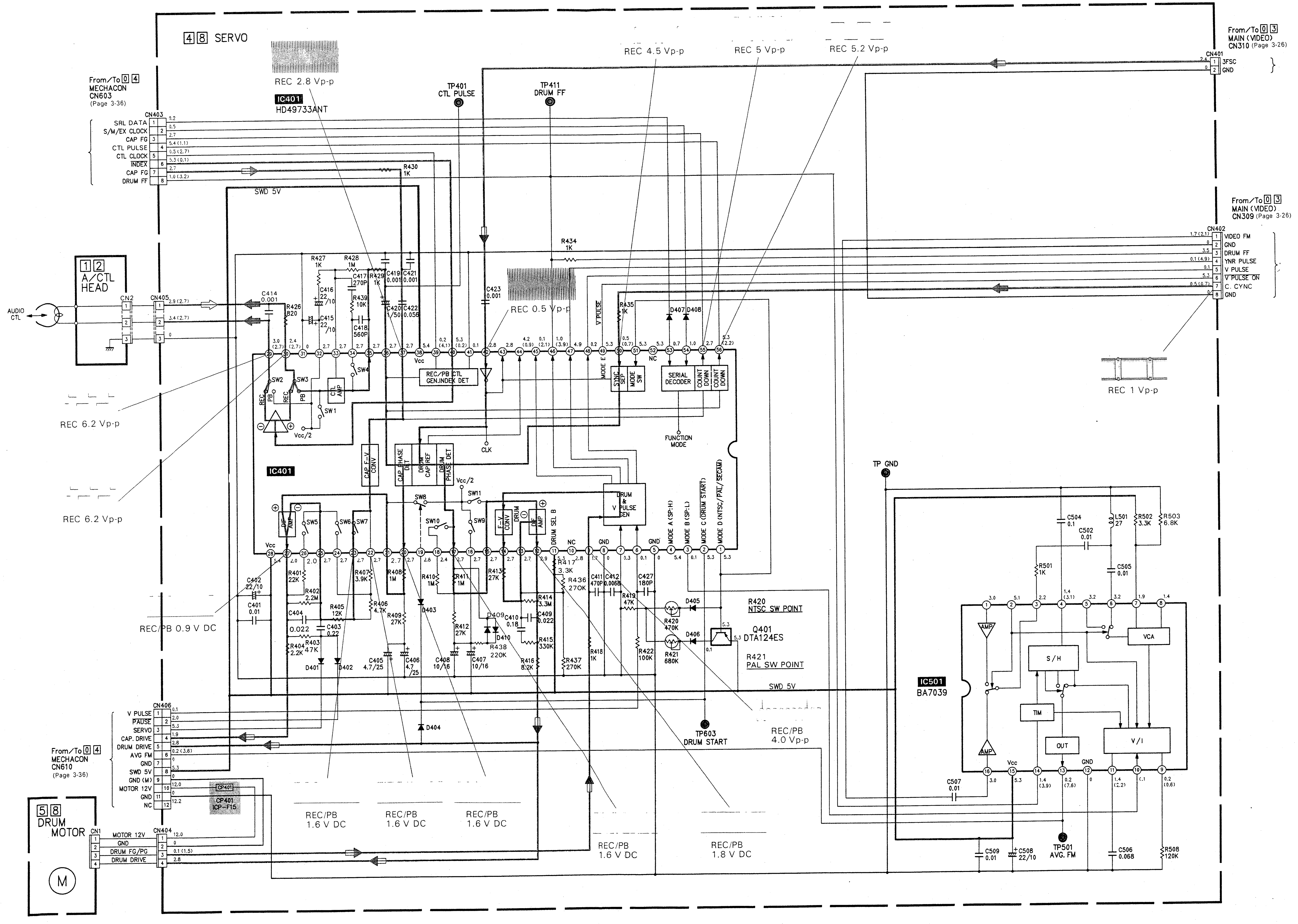


6
5
4
3
2
1
A
B
C
D
E
F
G
H
43 PRE/REC
Q1 2SA1576QRS
Q2 2SC4081QRS
Q3 DTA124EU
Q8 DTC144WU
Q4,Q5 2SC4081QRS
Q9 DTC144WU
Q6 2SC4081QRS
Q7 2SA1576QRS
Q10 DTC144WU
41 UPPER DRUM
From/To 03 MAIN (VIDEO) CN307 (Page 3-27)
CCIR 5V
PAL MESECAM
NC
SP
CN3
REC/PB 2.8 Vp-p
PB 0.36 Vp-p
From/To 03 MAIN (VIDEO) CN304 (Page 3-27)
CN1
SYNC
GND
PB FM COLOR
REC FM COLOR
PB COLOR
GND
From/To 03 MAIN (VIDEO) CN305 (Page 3-27)
CN2
HEAD SEL
AUTO/MAIN/SLOW SEL
COLOR ROT
NC
DRUM FF
SWD 5V
REC START
REC 0.4 Vp-p
REC/PB 5.0 Vp-p
PB 0.62 Vp-p
IC1 AN3386NKA
SWD 5V
L14 100
REC/PB SW
AGC DET
ENV DET
ENV CONP
INTEGRATED INJECTION LOGIC (I1L) CTL LOGIC
MUTE SW ON/OFF
REC DET
To HEAD SW
SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8
SW9
SW10
SW11
SW12
SW13
SW14
SW15
SW16
SW17
SW18
PRE AMP
CH1
CH2
EP
SP
OFF
(AUTO)
MUTE
REC
GND
Vcc
D1
D2 MA141WK
D3 MA141WA
D4
CN4
LP CH1
LP CH2
SP CH1
SP CH2
PB 0.6 Vp-p
REC/PB 0.4 Vp-p
REC 0.5 Vp-p
REC 2.6 Vp-p
REC 3.0 Vp-p
REC 1.6 Vp-p

3.2.4 PRE/REC CIRCUIT BOARD

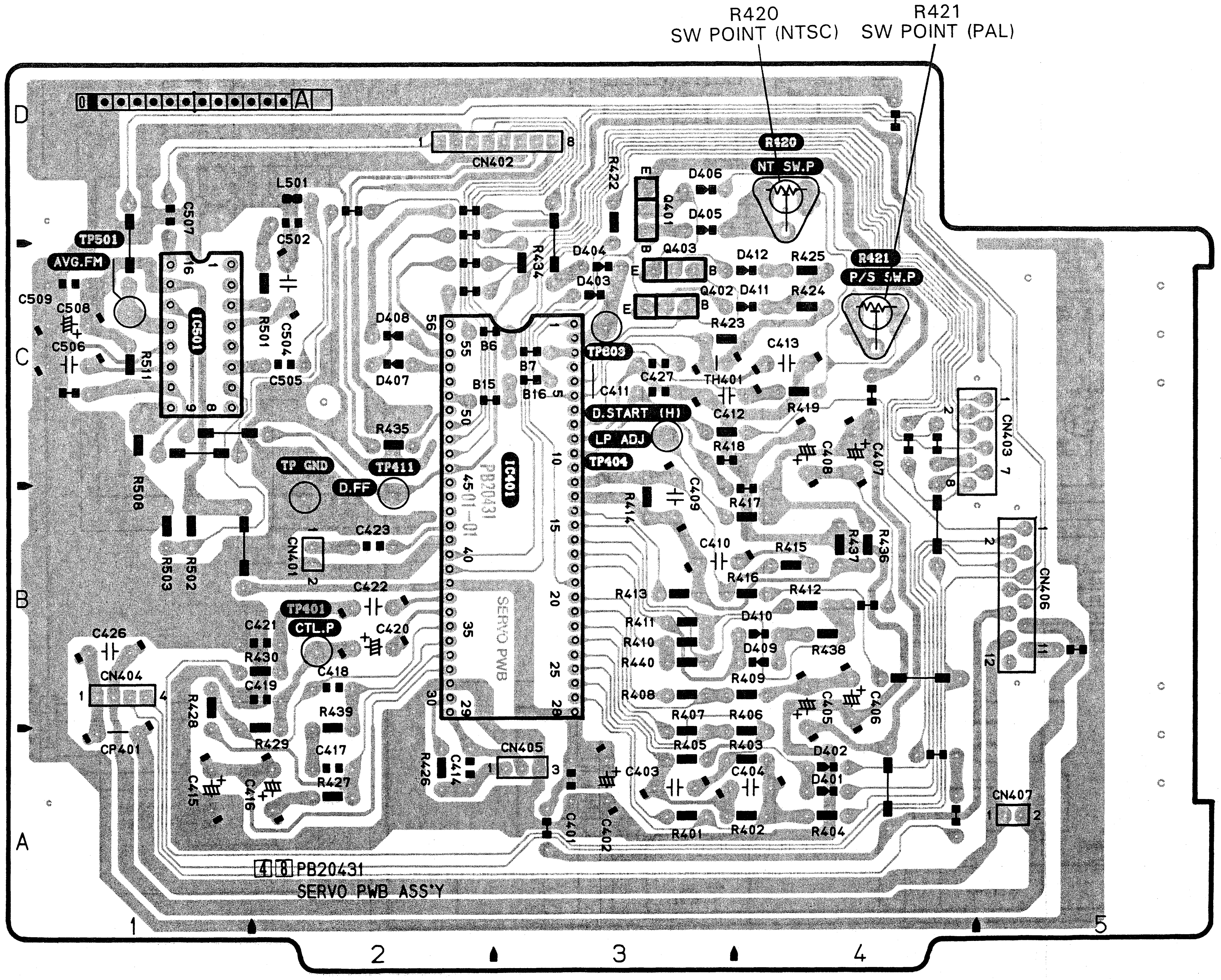

A
B
C
1
2
IC1
CN1
CN2
CN3
CN4
B21 B22 B24 B25 B26 B31 B32 B33 B34 B35 B36 B37 B38 B39
C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18 C19 C20 C21 C22 C25 C26 C27 C28 C29 C30 C31 C32 C34 C35 C36 C37 C38 C39 C40 C41 C42 C43 C44 C45 C46 C48 C51 C53
R1 R2 R3 R5 R6 R7 R8 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20 R21 R22 R23 R24 R25 R26 R27 R28 R29 R30 R31 R32 R33 R34 R36 R37 R38 R39 R40 R41 R42 R43 R44 R45 R46 R47
L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12 L13 L14
Q1 Q2 Q3 Q5 Q7 Q8 Q9 Q10
D1 D2 D3 D4
PB10434 PRE/REC PWB ASS'Y
A-01
PB10434 -01-01 PRE/REC PWB
1 2 3 4 5 6

3.25 SERVO SCHEMATIC DIAGRAM



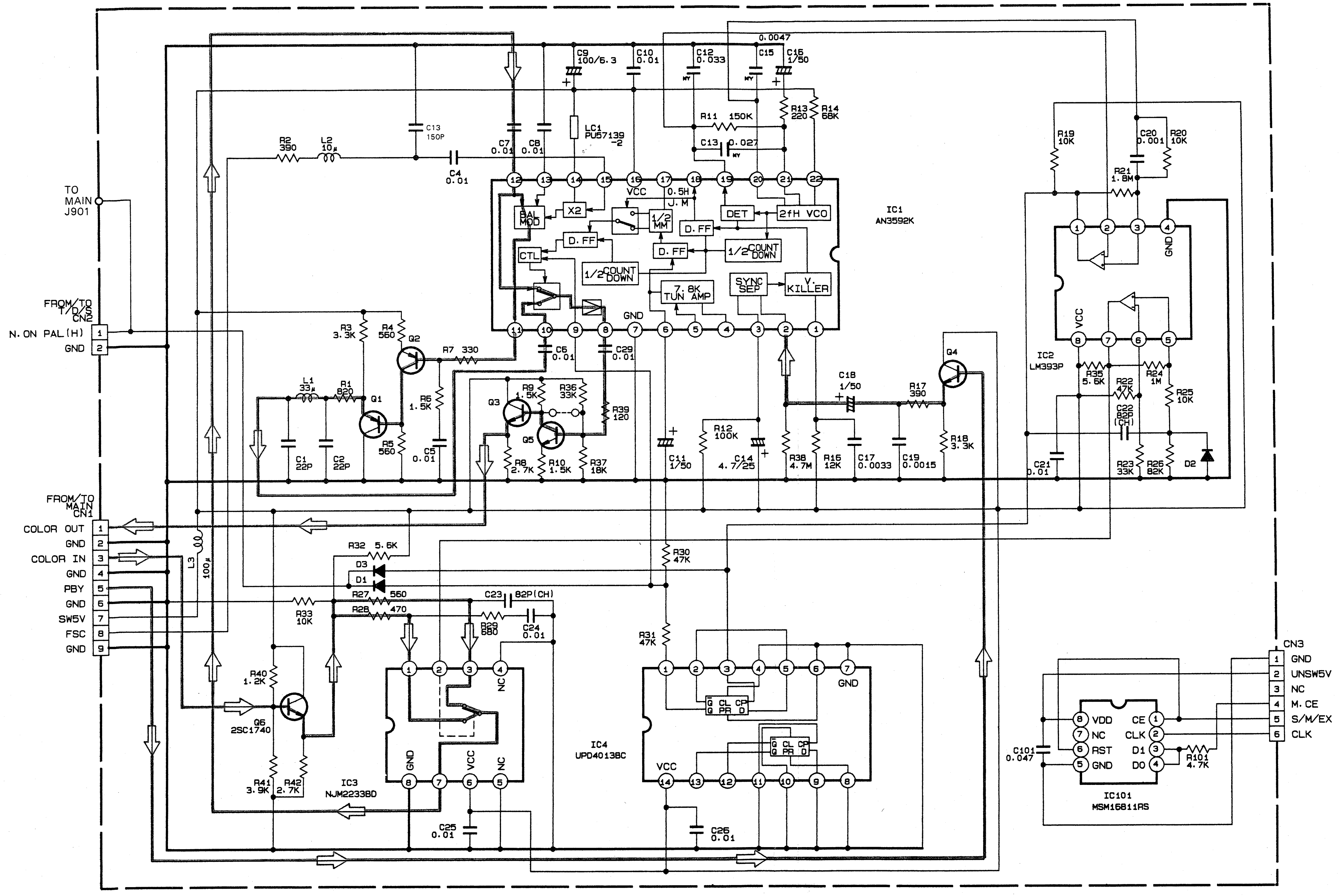
48 SERVO
From/To 04 MECHACON CN603 (Page 3-36)
CN403
SRL DATA
S/M/EX CLOCK
CAP FG
CTL PULSE
CTL CLOCK
INDEX
CAP FG
DRUM FF
REC 2.8 Vp-p
IC401
HD49733ANT
TP401 CTL PULSE
TP411 DRUM FF
REC 4.5 Vp-p
REC 5 Vp-p
REC 5.2 Vp-p
From/To 03 MAIN (VIDEO) CN310 (Page 3-26)
CN401
3FSC
GND
From/To 03 MAIN (VIDEO) CN309 (Page 3-26)
CN402
VIDEO FM
GND
DRUM FF
YNR PULSE
V PULSE
V PULSE ON
C. CYNC
GND
SWD 5V
R430 1K
R434 1K
12 A/CTL HEAD
AUDIO CTL
CN2
CN405
C414 0.001
R426 820
R427 1K
R428 1M
C416 22/10
C415 22/10
C417 270P
R429 1K
R439 10K
C418 560P
C419 0.001
C420 1/50
C421 0.001
C422 0.056
C423 0.001
REC 0.5 Vp-p
V PULSE
R435 1K
D407
D408
REC/PB CTL GEN.INDEX DET
SYNC SEP
MODE SW
SERIAL DECODER
COUNT DOWN
COUNT DOWN
FUNCTION MODE
CLK
CTL AMP
SW1
SW2
SW3
SW4
Vcc/2
REC 6.2 Vp-p
REC 6.2 Vp-p
REC 1 Vp-p
CAP F-V CONV
CAP PHASE DET
DRUM CAP REF
DRUM PHASE DET
DRUM & V PULSE GEN
SW5
SW6
SW7
SW8
SW9
SW10
SW11
DIF AMP
F-V CONV
DRUM
DIF AMP
DRUM SEL B
MODE A (SP:H)
MODE B (SP:L)
MODE C (DRUM START)
MODE D (NTSC/PAL/SECAM)
MODE E
NC
GND
Vcc
C402 22/10
C401 0.01
REC/PB 0.9 V DC
R401 22K
R402 2.2M
C404 0.022
R405 12K
C403 0.22
R404 2.2K
R403 47K
D401
D402
R407 3.9K
R406 4.7K
R408 1M
R409 27K
C405 4.7/25
C406 4.7/25
D403
R410 1M
R411 1M
C408 10/16
R412 27K
R413 27K
D409
D410
C407 10/16
R438 220K
C410 0.18
C409 0.022
R414 3.3M
R415 330K
R416 8.2K
R417 3.3K
R436 270K
R437 270K
C411 470P
C412 0.0068
R418 1K
R419 47K
C427 180P
R422 100K
R420 470K
R421 680K
D405
D406
R420 NTSC SW POINT
Q401 DTA124ES
R421 PAL SW POINT
D404
TP603 DRUM START
REC/PB 4.0 Vp-p
REC/PB 1.6 V DC
REC/PB 1.6 V DC
REC/PB 1.6 V DC
REC/PB 1.6 V DC
REC/PB 1.8 V DC
From/To 04 MECHACON CN610 (Page 3-36)
CN406
V PULSE
PAUSE
SERVO
CAP. DRIVE
DRUM DRIVE
AVG FM
GND
SWD 5V
GND (M)
MOTOR 12V
GND
NC
CP401
CP401 ICP-F15
58 DRUM MOTOR
M
CN1
CN404
MOTOR 12V
GND
DRUM FG/PG
DRUM DRIVE
TP GND
C504 0.1
C502 0.01
L501 27
R502 3.3K
R503 6.8K
R501 1K
C505 0.01
AMP
S/H
VCA
IC501
BA7039
TIM
OUT
V/I
AMP
Vcc
GND
C507 0.01
C509 0.01
C508 22/10
TP501 AVG. FM
C506 0.068
R508 120K
A
B
C
E
F
G
H
1
2
3
4
5
6

3.26 SERVO CIRCUIT BOARD


R420
SW POINT (NTSC)
R421
SW POINT (PAL)
R420
NT SW.P
R421
P/S SW.P
CN402
IC401
PB20431
4501-01
SERVO PWB
IC501
TP501
AVG.FM
TP GND
TP411
D.FF
TP401
CTL.P
TP803
D.START (H)
LP ADJ
TP404
Q401
Q402
Q403
TH401
L501
CN401
CN403
CN404
CN405
CN406
CN407
CP401
B6
B7
B15
B16
C401
C402
C403
C404
C405
C406
C407
C408
C409
C410
C411
C412
C413
C414
C415
C416
C417
C418
C419
C420
C421
C422
C423
C426
C427
C502
C504
C505
C506
C507
C508
C509
D401
D402
D403
D404
D405
D406
D407
D408
D409
D410
D411
D412
R401
R402
R403
R404
R405
R406
R407
R408
R409
R410
R411
R412
R413
R414
R415
R416
R417
R418
R419
R422
R423
R424
R425
R426
R427
R428
R429
R430
R434
R435
R436
R437
R438
R439
R440
R501
R502
R503
R508
R511
48 PB20431
SERVO PWB ASS'Y
A
B
C
D
1
2
3
4
5

6
5
4
3
2
1
A
B
C
E
F
G
H

3.27 COLOR PROCESS SCHEMATIC DIAGRAM



TO MAIN J901
FROM/TO T/D/S CN2
N.ON PAL(H)
GND
FROM/TO MAIN CN1
COLOR OUT
GND
COLOR IN
GND
PBY
GND
SW5V
FSC
GND
R2 390
L2 10μ
C13 150P
C4 0.01
C7 0.01
C8 0.01
C9 100/6.3
LC1 PU57139-2
C10 0.01
C12 0.033
C15
C16 1/50
0.0047
R11 150K
R13 220
R14 68K
C13 0.027
MY
VCC
0.5H J.M
BAL MOD
X2
D.FF
1/2 MM
DET
2fH VCO
CTL
D.FF
1/2 COUNT DOWN
7.8K TUN AMP
SYNC SEP
V.KILLER
GND
IC1 AN3592K
R3 3.3K
R4 560
Q2
R7 330
C6 0.01
C29 0.01
L1 33μ
R1 820
Q1
R6 1.5K
R9 1.5K
R36 33K
Q3
Q5
R39 120
C1 22P
C2 22P
R5 560
C5 0.01
R8 2.7K
R10 1.5K
R37 18K
C11 1/50
R12 100K
C14 4.7/25
R38 4.7M
R16 12K
C17 0.0033
C19 0.0015
C18 1/50
R17 390
Q4
R18 3.3K
R19 10K
C20 0.001
R20 10K
R21 1.8M
IC2 LM393P
VCC
GND
R35 5.6K
R22 47K
R24 1M
R25 10K
C22 82P (CH)
C21 0.01
R23 33K
R26 82K
D2
L3 100μ
R32 5.6K
D3
D1
R27 560
R28 470
C23 82P(CH)
R29 680
C24 0.01
R33 10K
R30 47K
R31 47K
R40 1.2K
Q6 2SC1740
R41 3.9K
R42 2.7K
IC3 NJM2233BD
NC
GND
VCC
NC
C25 0.01
IC4 UPD40138C
VCC
GND
Q CL CP
Q PR D
C26 0.01
CN3
GND
UNSW5V
NC
M.CE
S/M/EX
CLK
VDD
NC
RST
GND
CE
CLK
D1
D0
C101 0.047
R101 4.7K
IC101 MSM16811RS

COLOR PROCESS DC Voltage

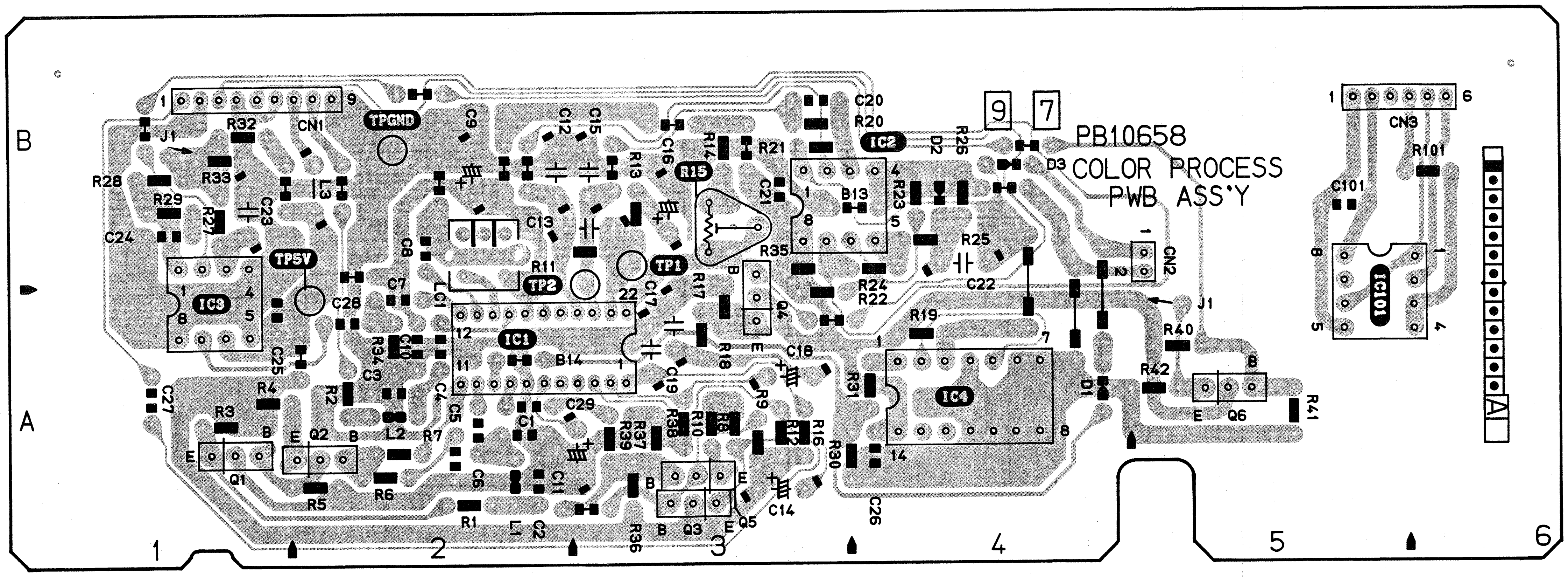
SYMBOL	No.	REC	PB
INTEGRATED CIRCUIT			
IC1	1		1.9
	2		3.0
	3		3.4
	4		1.6
	5		3.0
	6		2.4
	7		0.0
	8		0.0
	9		0.0
	10		0.0
	11		3.3
	12		3.1
	13		3.1
	14		4.6
	15		4.7
	16		4.8
	17		2.4
	18		-0.1
	19		2.1
	20		2.3
	21		2.1
	22		0.8
IC2	1		0.0
	2		2.1
	3		2.3
	4		0.0
	5		0.0
	6		1.9
	7		0.1
	8		0.1
IC3	1		3.0
	2		0.1
	3		3.0
	4		0.0
	5		-0.1
	6		4.7
	7		2.2
	8		0.0
IC4	1		0.0
	2		4.7
	3		0.4
	4		0.0
	5		4.7
	6		0.0
	7		0.0
	8		0.0
	9		0.0
	10		0.0
	11		0.0
	12		0.0
	13		4.7
	14		4.7

SYMBOL	No.	REC	PB
IC101	1		0.0
	2		0.4
	3		0.0
	4		0.0
	5		0.0
	6		0.0
	7		0.0
	8		4.9
TRANSISTOR			
Q1	B		0.8
	C		0.0
	E		2.4
Q2	B		3.3
	C		0.8
	E		4.0
Q3	B		3.7
	C		4.7
	E		3.1
Q4	B		2.1
	C		4.7
	E		1.6
Q5	B		1.6
	C		3.7
	E		1.0
Q6	B		3.6
	C		4.7
	E		3.0
CONNECTOR			
CN1	1		3.1
	2		0.0
	3		3.6
	4		0.0
	5		2.2
	6		0.0
	7		4.8
	8		3.4
	9		0.0
CN2	1		0.1
	2		0.0
CN3	1		0.0
	2		4.9
	3		0.1
	4		0.0
	5		0.0
	6		0.4

NOTES: UNLESS OTHERWISE SPECIFIED
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.
+‖ ELECTROLYTIC
⊣⊢ CERAMIC ⊣⊢MY MYLER

ALL DIODES ARE 1SS133 or MA165.
ALL NPN TYPE TRANSISTORS ARE
2SC1740S(RS)or2SC3199.
ALL PNP TYPE TRANSISTORS ARE
2SA933S(RS)or2SA1267(YG).

3.28 COLOR PROCESS BOARD


PB10658
COLOR PROCESS
PWB ASS'Y
9
7
A
B
1
2
3
4
5
6
CN1
CN2
CN3
IC1
IC2
IC3
IC4
IC101
TPGND
TP5V
TP1
TP2
J1
Q1
Q2
Q3
Q4
Q5
Q6
D1
D2
D3
L1
L2
L3
LC1
B13
B14
R1
R2
R3
R4
R5
R6
R7
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R28
R29
R30
R31
R32
R33
R34
R35
R36
R37
R38
R39
R40
R41
R42
R101
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
C24
C25
C26
C27
C28
C29
C101
E
B

6

5

4

3

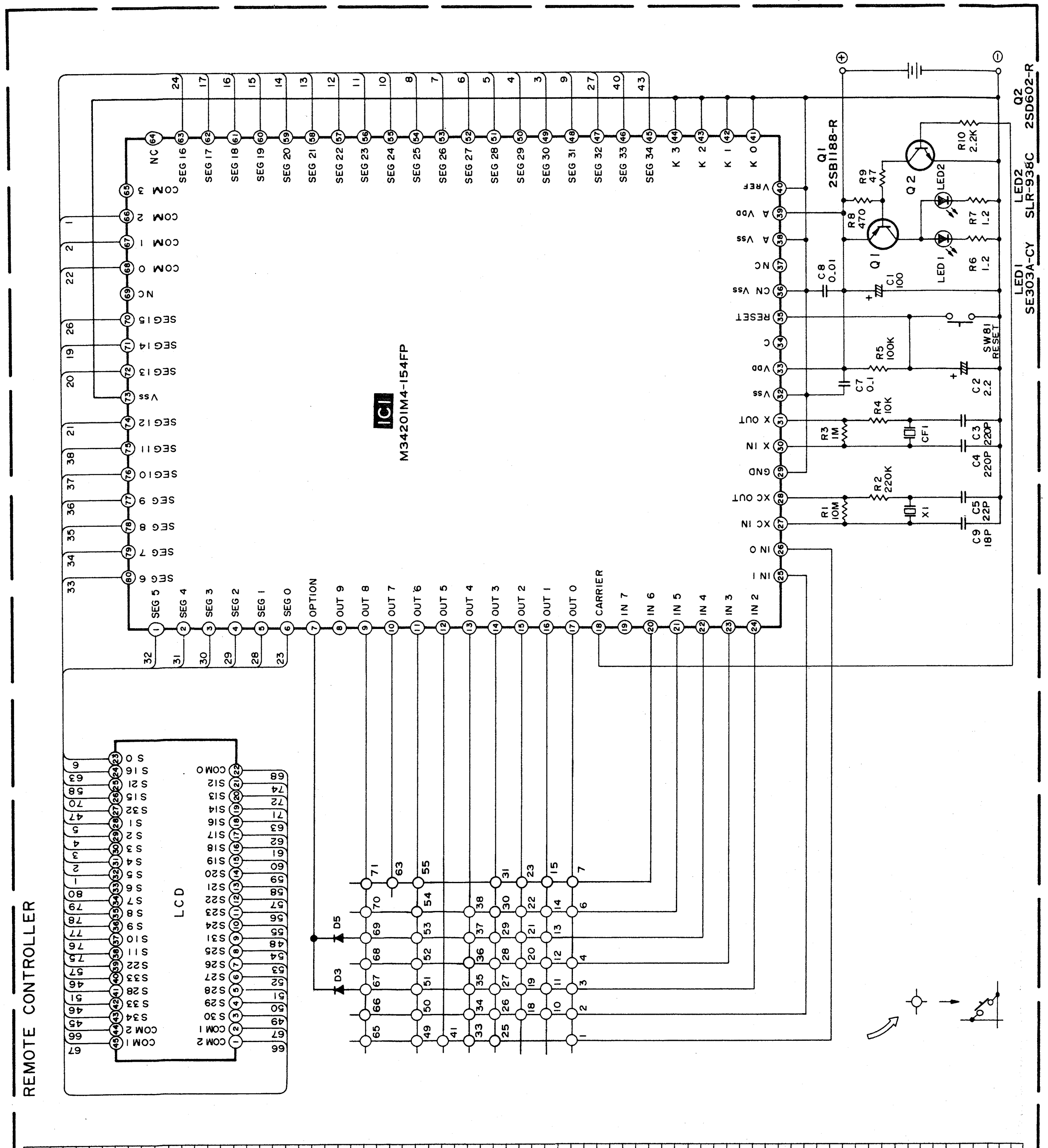
2

1

A B C D E F G H

3.29 REMOTE CONTROL SCHEMATIC DIAGRAM

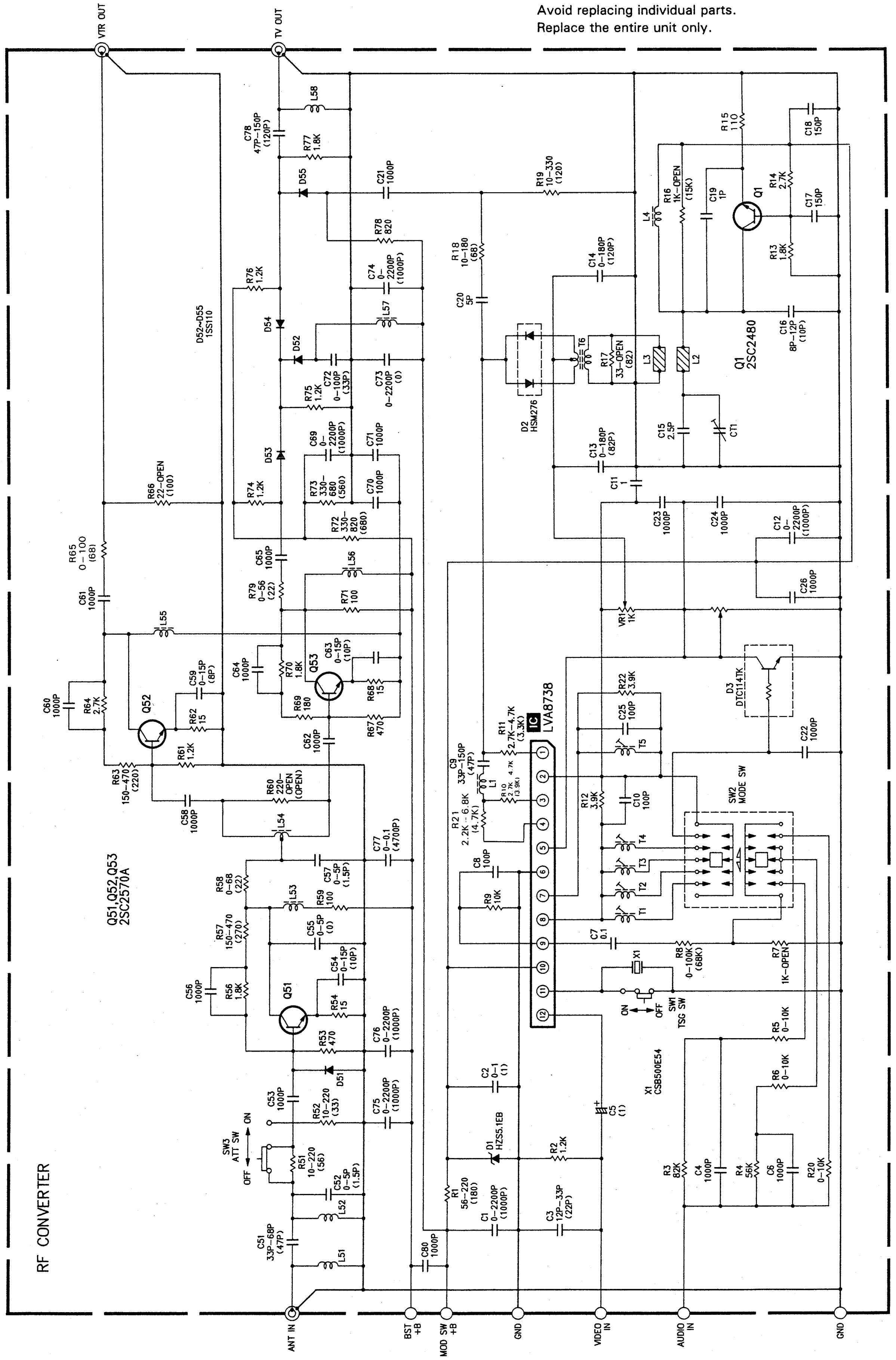
NOTES: 1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entrie unit only.


REMOTE CONTROLLER
IC1
M34201M4-154FP
LCD
Q1
2SB1188-R
Q2
2SD602-R
LED1
SE303A-CY
LED2
SLR-938C
SW81
RESET
CF1
X1
D3
D5

KEY NUMBER	FUNCTION
1	A/B CODE
2	CLOCK ADJ
3	1
4	6
6	MARK
7	EDIT MODE
10	MEMORY PROG
11	2
12	7
13	CH ∨ /CUSOR→
14	EDIT START
15	EDIT STANDBY
18	MEMORY CANCEL
19	3
21	CH ∧ /CURSOR→
22	INDEX/PAGE
23	ERASE
25	TRANS
26	PROGRAM/ACCESS
27	4
28	9
29	DISPLAY/ROTATE
30	GO-TO/TIMED PAGE
31	C.MEMORY
33	TIMER
34	CANCEL/RESET
35	5
36	O/AUX
37	VHS/CH/REVEAL
38	INTRO/PAGE(+)
41	TV/VTR
49	STOP/HOLD
50	EJECT
51	FF/BLUE
52	REW
53	REC
54	PLAY/OK/STORE
55	PAUSE/MIX
63	SKIP/BLANK/SEARCH
65	MONITOR TV/VIDEO
66	TV OPERATE
67	TV CH ∨
68	TV CH ∧
69	TV VOL +
70	TV VOL −
71	OPERATE

3.30 RF CONVERTER AND SWITCH SCHEMATIC DIAGRAM

NOTE: 1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.


RF CONVERTER
VTR OUT
TV OUT
ANT IN
BST +B
MOD SW +B
GND
VIDEO IN
AUDIO IN
GND
IC LVA8738
Q1 2SC2480
Q51,Q52,Q53 2SC2570A
D52-D55 1SS110
D2 HSM276
D1 HZ5.1EB
D3 DTC114TK
X1 CSB500E54
SW1 TSG SW
SW2 MODE SW
SW3 ATT SW
ON
OFF

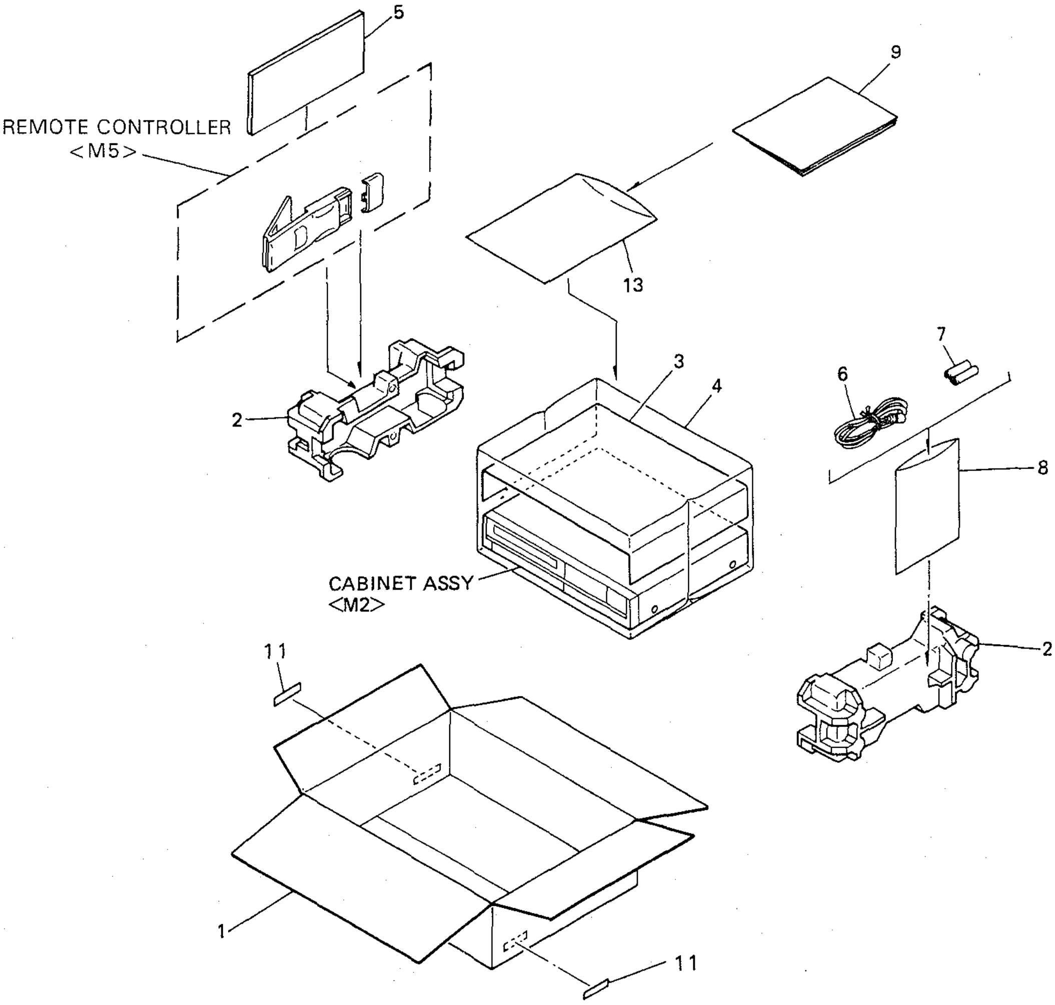
SECTION 4
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

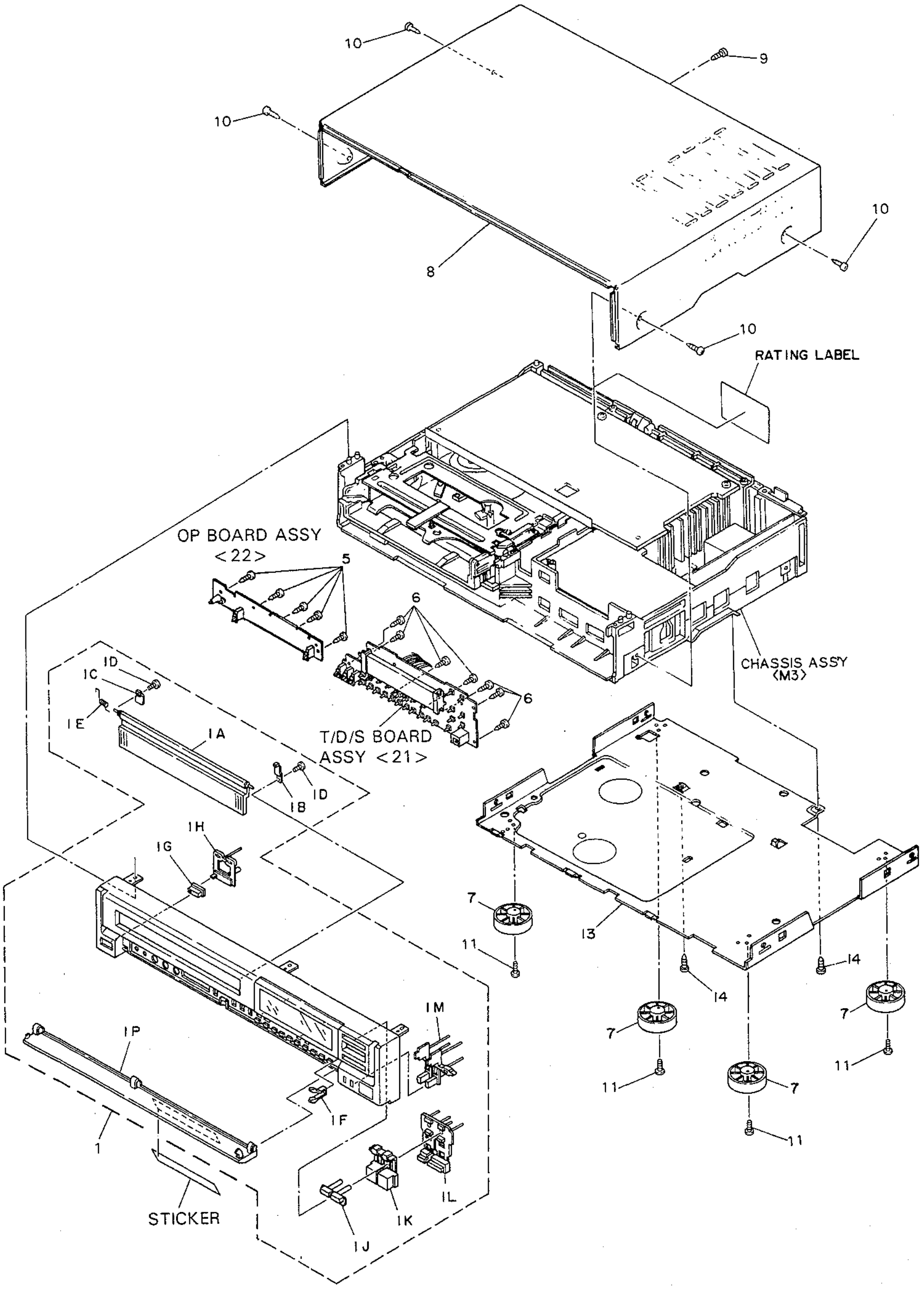
NOTE: <M > indicates mechanical symbol number.

4.1 PACKING ASSEMBLY <M1>



#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
			PACKING ASSEMBLY <M1>
	1	PQ32790-239	PACKING CASE
	2	PQ32817A-5	CUSHION ASSY
	3	PQ41026-20	PROTECT SHEET
	4	PQM30021-59-11	POLY BAG
	5	PQ42987-6	SHEET
	6	PU59168-3	RF CABLE
	OR	PU59167-3	RF CABLE
	7	UM-3DJ2P	BATTERY, X2
	8	QPGA020-02005	POLY BAG
⚠	9	PGD30002-275-01	INSTRUCTIONS
	11	PUP40619	SERIAL NO.STICKER, X2
	13	QPGA025-03505	POLY BAG

4.2 CABINET ASSEMBLY <M2>



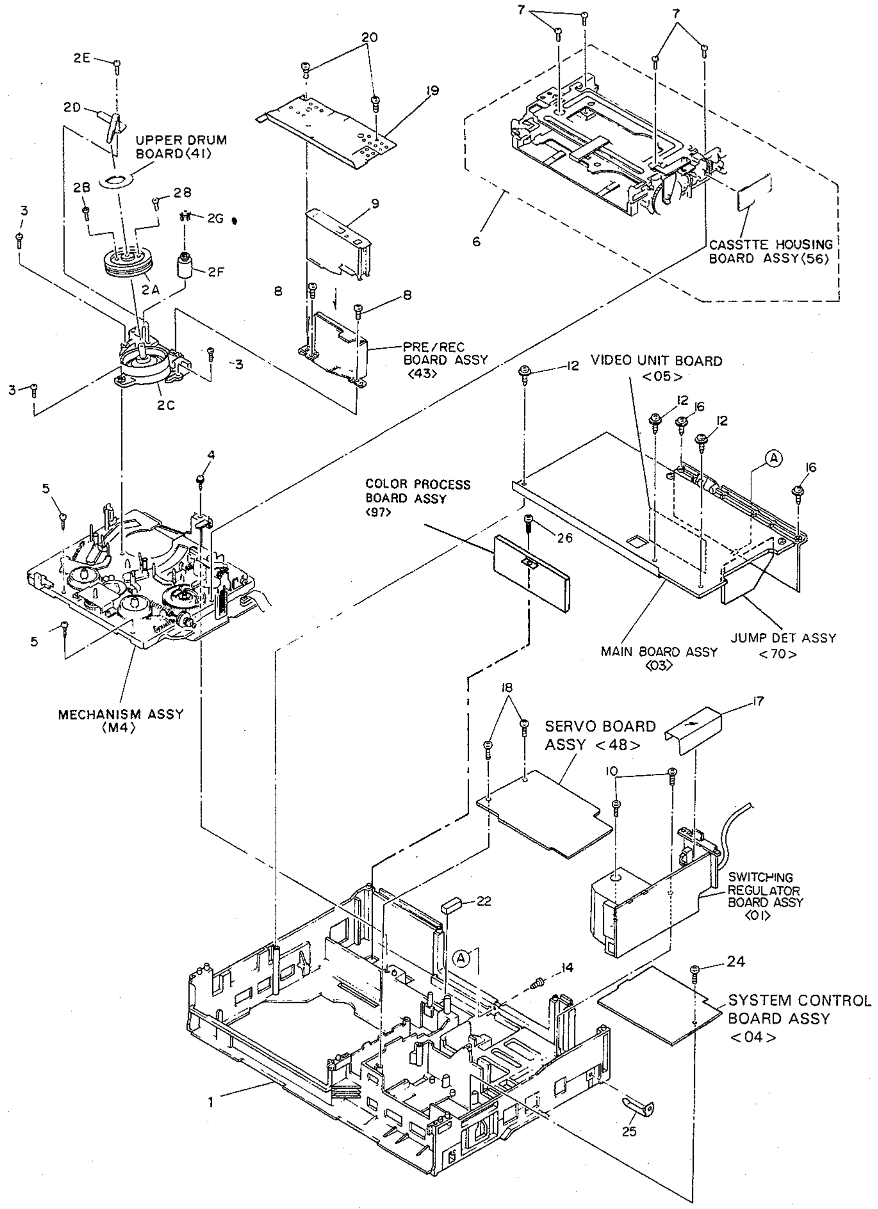
10
9
10
10
8
10
RATING LABEL
OP BOARD ASSY
<22>
5
6
CHASSIS ASSY
<M3>
1D
1C
1E
1A
T/D/S BOARD
ASSY <21>
6
1B
1D
1H
1G
7
13
11
14
14
1M
1P
7
7
11
11
7
11
1F
1
STICKER
1L
1K
1J

```
***********************************************
*          CABINET ASSEMBLY <M2>              *
***********************************************
```

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	PQ10837M	FRONT PANEL ASSY
	1A	PQ20811-11	CASSETTE DOOR
	1B	PQ43371	BRACKET 1
	1C	PQ43736	BRACKET(4)
	1D	SDSF2006Z	SCREW, X2
	1E	PQ43628-1-1	TORSION SPRING
	1F	PU60005	PUSH OPEN UNIT
	1G	PQ32617-9	BUTTON(POWER)
	1H	PQ43730	INDICATOR(POWER)
	1J	PQ32842-3	BUTTON(FF)
	1K	PQ32843-3	BUTTON(PLAY)
	1L	PQ20813-5	BUTTON(PAUSE)
	1M	PQ32844-2	BUTTON(CH)
	1P	PQ32845M	DOOR ASSY
	5	SDSF2608Z	SCREW, X5
	6	SDSF2608Z	SCREW, X7
	7	PQ43456C	FOOT ASSY, X4
⚠	8	PQ10602-20	TOP COVER
	9	SDSF3010R	SCREW
	10	PQ43827-3	SPECIAL SCREW, X4
	11	SDSF3012Z	SCREW, X4
⚠	13	PQ10712-1-5	BOTTOM COVER
	14	SDSF3012Z	SCREW, X2, FOR BOTTOM COVER

4.3 CHASSIS ASSEMBLY <M3>

BEWARE OF BOGUS PARTS
Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.

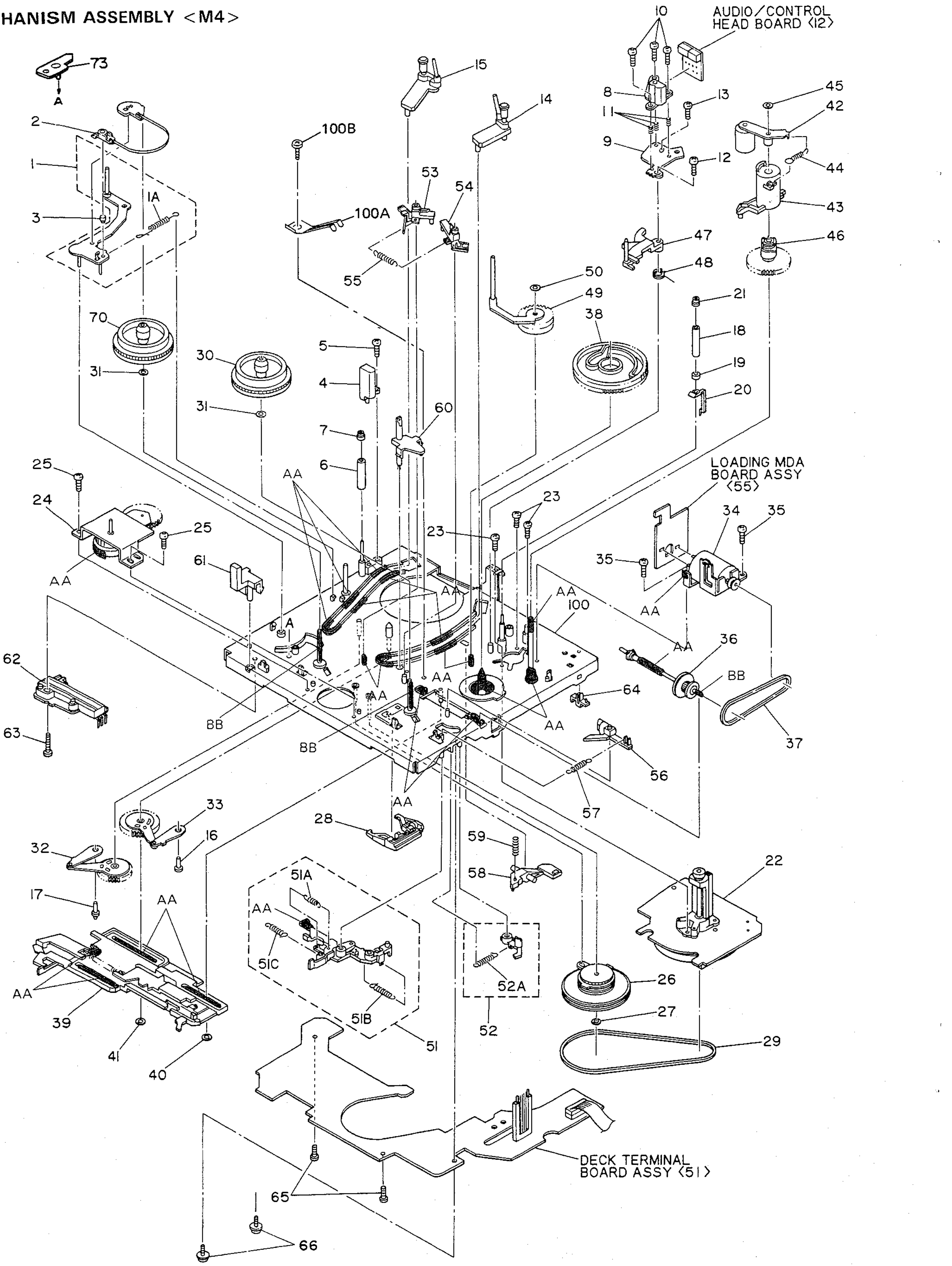


2E
2D
UPPER DRUM BOARD(41)
2B
2B
2G
3
2F
2A
3
3
2C
20
19
9
8
8
PRE/REC BOARD ASSY <43>
7
7
6
CASSTTE HOUSING BOARD ASSY(56)
12
VIDEO UNIT BOARD <05>
12
16
12
A
16
4
5
5
MECHANISM ASSY (M4)
COLOR PROCESS BOARD ASSY <97>
26
MAIN BOARD ASSY <03>
JUMP DET ASSY <70>
18
SERVO BOARD ASSY <48>
17
10
SWITCHING REGULATOR BOARD ASSY <01>
22
A
14
24
SYSTEM CONTROL BOARD ASSY <04>
1
25

****
* CHASSIS ASSEMBLY <M3> *
****

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	1	PQ10764-1-7	BOTTOM CHASSIS
	2A	PDM2002D	UPPER DRUM ASSY
	2B	PDM4165A	DRUM SCREW ASSY, X2
	2C	PDM2108K	LOWER DRUM MOTOR ASSY
	2D	PDM4181A-6	BRUSH ASSY
	2E	SPSG2606Z	SCREW, FOR BRUSH ASSY
	2F	PDM4187A	I.D.ROLLER ASSY
	2G	PQ41163	CAP
	3	SPST2610Z	SCREW, X3, FOR DRUM
	4	PQ43831	SPECIAL SCREW, FOR MAIN DECK
	5	PQ43831	SPECIAL SCREW,X2,FOR MAIN DECK
	6	PUS29499B	CASSETTE HOUSING ASSY
	7	SDST2608Z	SCREW, X4, FOR C.HOUSING
	8	SDSG2606Z	SCREW, X2, FOR PRE/REC
	9	PQ32217-2	SHIELD CASE(2), FOR PRE/REC
	10	PQ43831	SPECIAL SCREW, X2, FOR P.TRANS
	12	GPSF2610Z	SCREW, X3, FOR MAIN BOARD
	14	SDSF3010M	SCREW, FOR TERMINAL BOARD
	16	GPSF2610Z	SCREW, X2, FOR TERMINAL BOARD
⚠	17	PQ44631	AC COVER
	18	SDSF2610Z	SCREW, X2, FOR SERVO
	19	PQ32387-1-4	DRUM SHIELD
	20	SDST2608Z	SCREW, X2 FOR D.SHIELD
	22	PQM30029-127	SPACER, CHASSIS
	24	SDSF2610Z	SCREW, FOR MECHACON
	25	PQ44679	EARTH PLATE
	26	SDSF2610Z	SCREW, FOR COLOR PROCESS BOARD

4.4 MECHANISM ASSEMBLY <M4>


10
AUDIO/CONTROL HEAD BOARD <12>
73
A
15
14
8
13
11
9
12
45
42
44
43
46
2
1
3
1A
100B
100A
53
54
55
47
48
50
49
38
21
18
19
20
70
31
30
31
5
4
7
6
60
AA
25
24
25
AA
61
23
23
LOADING MDA BOARD ASSY <55>
34
35
35
AA
AA
100
AA
36
BB
37
62
63
A
BB
BB
AA
AA
64
AA
56
57
33
16
32
17
AA
28
AA
59
58
22
51A
AA
51C
51B
51
52A
52
26
27
29
AA
39
41
40
DECK TERMINAL BOARD ASSY <51>
65
66

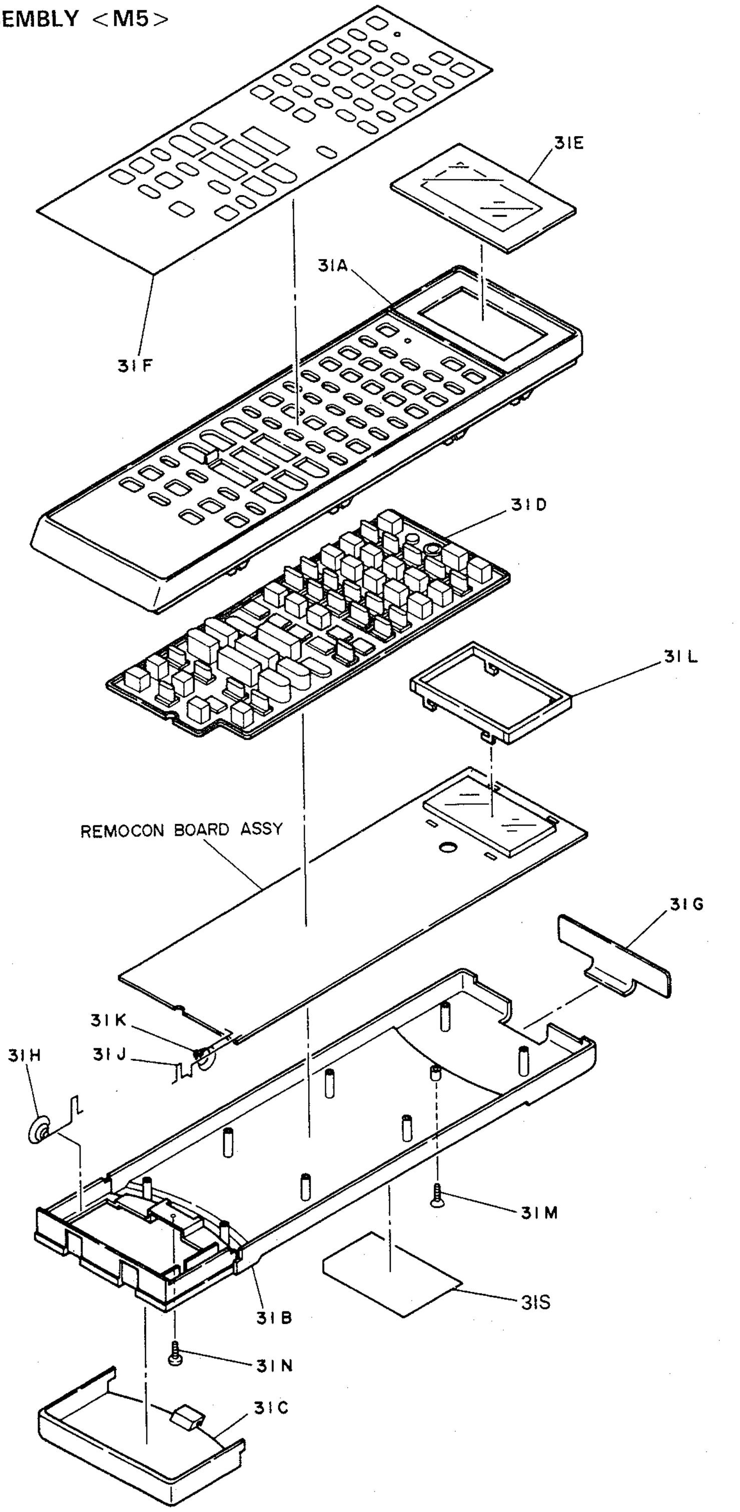
Category	Part number	MARK
Grease	KANTO-G-31KAV	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

MECHANISM ASSEMBLY <M4>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	PQ43497E-11	TENSION ARM ASSY
	1A	PQ43500	TENSION SPRING
	2	PQ43501B-11	TENSION BAND ASSY
	3	PQ43503-1-4	ADJUST PIN
	4	PU60616	FULL ERASE HEAD
	5	SDSF2614Z	TAPPING SCREW
	6	PQ43505-1-1	ROLLER
	7	PQ43506	GUIDE POLE CAP
	8	PU60617	AUDIO/CONTROL HEAD
	9	PQ43509	HEAD BASE
	10	PQ43687A	SCREW, X3
	11	PQM30002-192	COMPRESSION SPRING, X3
	12	SPSP2606Z	SCREW
	13	SPSF2608M	SCREW
	14	PU61103-2-7	POLE BASE ASSY(TAKE-UP)
	15	PU61151-2-6	POLE BASE ASSY(SUPPLY)
	16	PQ45895	STOPPER(T)
	17	PQ45894	STOPPER(S)
	18	PQ43526-1-3	TAPE GUIDE
	19	PQ43670-1-1	GUIDE FLANGE
	20	PQ43675	TAPE GUARD
	21	PQ43506	GUIDE POLE CAP
⚠	22	PU60892-1-5	CAPSTAN MOTOR
	23	SPSG2608Z	TAPPING SCREW, X3
	24	PU60618-1-3	IDLER GEAR UNIT
	25	SPST2606Z	SCREW, X2
	26	PU60953-1-6	CLUTCH UNIT
	27	PQM30017-8	SLIT WASHER
	28	PQ43532B	CHANGE LEVER ASSY
	29	PQM30003-24	BELT
	30	PU60858-1-4	REEL DISK (TAKE-UP)
	31	PQM30018-54	SPACER, X2
	32	PQ43537A	LOADING ARM ASSY(SUPPLY)
	33	PQ43542B	LOADING ARM ASSY(TAKE-UP)
	34	PQ43676B-5	MODE MOTOR ASSY
	OR	PQ43676C-7	MODE MOTOR ASSY
	35	SPST2606Z	TAPPING SCREW, X2
	36	PQ43548A-2	WORM CLUTCH ASSY
	37	PQM30003-23	BELT(LOADING)
	38	PQ32413-1-6	CONTROL CAM
	39	PQ43555B-6	PLATE ASSY
	40	PQM30017-12	SLIT WASHER
	41	PQM30017-8	SLIT WASHER
	42	PQ43558A-5	PINCH ROLLER ARM ASSY
	OR	PQ43558B	PINCH ROLLER ARM ASSY
	43	PQ32415	PINCH ROLLER PRESS LEVER
	44	PQM30001-233	TENSION SPRING
	45	PQM30017-12	SLIT WASHER
	46	PQ32416-2	PINCH ROLLER CAM
	47	PQ43567A-13	GUIDE ARM ASSY
	48	PQ43569-1-3	TORSION SPRING
	49	PQ43570A-2	HALF LOADING GEAR ASSY
	50	PQM30017-12	SLIT WASHER
	51	PQ43575A-5	CANCEL LEVER ASSY
	51A	PQM30001-273	TENSION SPRING
	51B	PQM30001-237	TENSION SPRING
	51C	PQM30001-274	TENSION SPRING
	52	PQ43578A-2	HOOK ASSY
	52A	PQM30001-238	TENSION SPRING
	53	PQ43581C	MAIN BRAKE ASSY(SUPPLY)
	54	PQ43582B	MAIN BRAKE ASSY(TAKE-UP)
	55	PQM30001-251	TENSION SPRING
	56	PQ43583A-3	SUB BRAKE ASSY(TAKE-UP)
	57	PQM30001-235	TENSION SPRING
	58	PQ43584A-5	CAPSTAN BRAKE ASSY
	59	PQM30002-201	COMPRESSION SPRING
	60	PU60621-1-2	LED HOLDER(INCL.LED:D1)
	61	PU60624-1-4	REC SAFETY SWITCH(S2)
	62	PU60622-1-2	SLIDE SWITCH(S3)
	63	SDSF2614Z	TAPPING SCREW
	64	PQ32516	PWB HOLDER
	65	SDST2616Z	TAPPING SCREW, X2
	66	GPSF2608Z	TAPPING SCREW, X2
	70	PU60859-1-4	REEL DISK (SUPPLY)
	OR	PQ45622A	REEL DISK (SUPPLY)
	73	PQ44246	TENSION BAND BRACKET-2
	100	PQ20650D-20	MAIN DECK ASSY
	100A	PQ43849	EARTH PLATE
	100B	SPST2604Z	SCREW

4.5 REMOTE CONTROL ASSEMBLY <M5>


31E
31A
31F
31D
31L
REMOCON BOARD ASSY
31G
31K
31J
31H
31M
31B
31S
31N
31C

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* REMOTE CONTROLLER ASSEMBLY <M5> *
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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	31	PQ10884R-8	REMOTE CONTROLLER
	31A	PQ20861	COVER(FRONT)
	31B	PQ20862	COVER(REAR)
	31C	PQ32956	CAP (BATTERY)
	31D	PQ20863-9	BUTTON
	31E	PQ44010	PLATE(1)
	31F	PQ32922-11-8	PLATE(2)
	31G	PQ32957	WINDOW(IR)
	31H	PQ44008	TERMINAL(A)
	31J	PQ44023	TERMINAL(B)
	31K	PQ44024	TERMINAL(C)
	31L	PQ44009	LCD HOLDER
	31M	SSSF2010M	SCREW
	31N	SPSJ2006M	SCREW
	31S	PQ32596-52	REMOCON LABEL

SECTION 5
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	* POWER TRANSFORMER BOARD ASSEMBLY<01><02> *		
	PWBA	PB20439X	P.SUPPLY BOARD ASSY
⚠	POC1	QMP4019-200	POWER CORD
⚠	BKT1	PQ20971	TRANS BRACKET
⚠	HD1	QHS3771-108	STRAIN RELIEF
	SCW1	SDST3006Z	SCREW, X2
	SLD1	PQ33261-1-2	SHIELD CASE (1)
	SLD2	PQ33262	SHIELD CASE (2)
	-SWITCH REGULATOR BOARD ASSEMBLY<01>-		
	PWBA1	PB20439K1-03	SWITCH REGULATOR BOARD ASSY
⚠	PHC1	PC111S	PHOTO COUPLER
	IC1	LM358N	IC
		OR LM358P	IC
		OR BA10358	IC
	Q1	2SC4304-LF619	TRANSISTOR
	Q2	2SC3616(MLK)	TRANSISTOR
	Q3	2SC1740S	TRANSISTOR
	Q4	2SC1741S	TRANSISTOR
	Q5	2SB941P	TRANSISTOR
		OR 2SA1488	TRANSISTOR
	Q9	OR 2SA1488	TRANSISTOR
	D1	10E6-F2	DIODE
	D2	10E6-F2	DIODE
	D3	10E6-F2	DIODE
	D4	10E6-F2	DIODE
	D5	AU01	FR DIODE
		OR 1SR153-400-T2	FR DIODE
	D6	AU01	FR DIODE
		OR 1SR153-400-T2	FR DIODE
	D7	MTZ27BT-77	ZENER DIODE
	D8	AU01Z	FR DIODE
		OR ERA18-02-T2	FR DIODE
		OR 1SR153-200-T2	FR DIODE
	D9	RD13ES-T1B3	DIODE
		OR UZ13BSC	ZENER DIODE
	D10	1SS133	DIODE
		OR MA165	DIODE
	D11	RD18ES-T1B1	ZENER DIODE
		OR UZ18BSA	ZENER DIODE
	D12	AU01Z	FR DIODE
		OR ERA18-02-T2	FR DIODE
	D14	AU01Z	FR DIODE
		OR ERA18-02-T2	FR DIODE
		OR 1SR153-200-T2	FR DIODE
	D15	AU01Z	FR DIODE
		OR ERA18-02-T2	FR DIODE
	D16	FML-12S	FR DIODE
		OR FCF06A20	FR DIODE
	D17	FMB-24	BARRIER DIODE
		OR F5KQ40B	BARRIER DIODE
	D18	AU01Z	FR DIODE
		OR ERA18-02-T2	FR DIODE
		OR 1SR153-200-T2	FR DIODE
	D19	MTZ30AT-77	ZENER DIODE
	D20	RD8.2ES-T1B1	ZENER DIODE
		OR UZ8.2BSA	ZENER DIODE
	D21	AK04	DIODE
		OR 11EQS04	SB DIODE
	D22	MTZV6.2A	ZENER DIODE
	D30	UZ33BSD	ZENER DIODE
		OR MTZ33DT-77	ZENER DIODE
		OR RD33ES-T1B4	ZENER DIODE
	R1	QRZ0078-2R2	W.W.RESISTOR
	R2	QRD161J-184	RESISTOR
	R3	QRD161J-184	RESISTOR
	R4	QRD161J-563	RESISTOR
	R5	QRG029J-683G	OMF RESISTOR
	R6	QRG029J-241G	OMF RESISTOR
	R7	QRD161J-122	RESISTOR
	R8	QRD161J-471	RESISTOR
	R9	QRX014J-R33	MF RESISTOR
	R10	QRG029J-303A	OMF RESISTOR
	R11	QRD161J-223	RESISTOR
	R12	QRD161J-472	RESISTOR
	R13	QRV144F-1653AY	RESISTOR
	R14	QRG029J-560G	RESISTOR
	R15	QRV144F-1653AY	RESISTOR
	R16	QRD161J-222	RESISTOR
	R17	QRD161J-221	RESISTOR
	R18	QRD161J-102	RESISTOR
	R19	QRV144F-1051AY	CMF RESISTOR
	R20	QRV144F-1001AY	CMF RESISTOR
⚠	R21	QRZ0077-470X	FUSIBLE RESISTOR
	R22	QRD161J-333	RESISTOR
	R23	QRD161J-471	RESISTOR
	R24	QRV144F-4023AY	RESISTOR
	R25	QRV144F-1002AY	CMF RESISTOR
	R26	QRV144F-1182AY	CMF RESISTOR
	R28	QRD161J-331	RESISTOR
	R29	QRD161J-103	RESISTOR
	R53	QRD161J-222	RESISTOR
⚠	C1	QFZ9037-333	M CAPACITOR
⚠	C2	QFZ9037-333	M CAPACITOR
⚠	C3	QFZ9037-333	M CAPACITOR
⚠	C6	QCZ9016-222M	CAPACITOR
⚠	C7	QCZ9016-222M	CAPACITOR
⚠	C8	QCZ9016-222M	CAPACITOR
⚠	C9	QCZ9016-222M	CAPACITOR
⚠	C10	QCZ9016-222M	CAPACITOR
⚠	C11	QCZ9016-222M	CAPACITOR
	C12	QEZ0147-107	E CAPACITOR
		OR QEZ0111-107	E CAPACITOR
	C13	QCY53AK-472	CAPACITOR
		OR QCZ0212-472	CAPACITOR
	C14	QCZ0212-101	CAPACITOR
	C15	QFV41HJ-474	TF CAPACITOR
		OR QFV11HJ-474	TF CAPACITOR
	C16	QFL41HJ-682	M CAPACITOR
	C17	QETC1HM-105	E CAPACITOR
	C18	QETC1JM-336	E CAPACITOR
	C19	QEZ0125-277	E CAPACITOR
		OR QEZ0138-277	E CAPACITOR
	C20	QETC1EM-107	E CAPACITOR
	C21	QEMB1CM-158	E CAPACITOR
	C22	QETB1CM-108	E CAPACITOR
	C23	QFL41HJ-102	M CAPACITOR
	C24	QEZ0136-228	E CAPACITOR
		OR QEZ0106-228	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C25	QETC1HM-476	E CAPACITOR
	C26	QETC1VM-336	E CAPACITOR
	C27	QFL41HJ-103	CAPACITOR
	C28	QEZ0156-127Z	E CAPACITOR
		OR QEZ0135-127Z	E CAPACITOR
	C29	QETC0JM-107	E CAPACITOR
	C30	QFL41HJ-103	CAPACITOR
	C50	QCBB1HJ-271	CAPACITOR
⚠	C52	QCZ9016-101K	CAPACITOR
⚠	C53	QCZ9016-101K	CAPACITOR
	C54	QCBB1HJ-471	M CAPACITOR
	C55	QFV11HJ-124	MMT CAP
	L1	PU60943-330K	COIL
	L2	PU60943-100M	COIL
	L3	PU60943-330K	COIL
	L4	PU60943-100M	COIL
⚠	T1	PELN0301	SW TRANS
⚠	HD1	PU57505	FUSE CLI, X2
	HS1	PQ44724	HEAT SINK
⚠	HS2	PQ44610-1-2	HEAT SINK, FOR Q1
⚠	LF1	PU61108	LINE FILTER
⚠		OR PU60347	LINE FILTER
⚠	LF2	PU59707	LINE FILTER
⚠		OR PELN0255	LINE FILTER
	SCW1	SDSG3008Z	SCREW
⚠	SCW2	SDSG3006Z	SCREW
	SCW3	SDSG3008Z	SCREW, X2
	SCW4	SDSG3006Z	SCREW
⚠	SLD1	PQ44698	INSULATOR
⚠	TAB1	A74316	TAB, X2
	CN1	PU58844-104	CAP HOUSING
	CN2	PU58844-7	CAP HOUSING
⚠	CP1	ICP-N5	CIRCUIT PROTECTOR
⚠	CP2	ICP-N20	CIRCUIT PROTECTOR
⚠	F1	QMF51E2-1R0	FUSE
⚠		OR QMF51E2-1R0J1	FUSE

-REGURATOR BOARD ASSEMBLY<02>-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA2	PB20439K2-03	REGULATOR BOARD ASSY
	Q7	2SB1425(EU)	TRANSISTOR
	Q8	2SC1740S	TRANSISTOR
	Q9	2SB941P	TRANSISTOR
	Q10	2SC1740S(Q)	TRANSISTOR
	Q11	2SC1740S	TRANSISTOR
	Q12	2SA933S	TRANSISTOR
		OR 2SA1267(YG)-TJK	TRANSISTOR
	Q14	2SB1068(KU)	TRANSISTOR
	Q15	2SB1068(KU)	TRANSISTOR
	Q16	2SC3377(QR)	TRANSISTOR
	Q17	2SC3377(R)	TRANSISTOR
	D24	11ES2	DIODE
		OR ERA15-02	DIODE
	D25	1SS133	DIODE
		OR MA165	DIODE
	D26	UZ5.1BSC	ZENER DIODE
		OR MTZV5.1C	ZENER DIODE
		OR RD5.1ES-T1B3	ZENER DIODE
	R31	QRD161J-102	RESISTOR
	R32	QRD161J-103	RESISTOR
	R33	QRD161J-221	RESISTOR
	R34	QRD161J-822	RESISTOR
	R35	QRD161J-471	RESISTOR
	R36	QRD161J-103	RESISTOR
	R37	QVZ3518-471AZ	V RESISTOR,SWD 5V
		OR QVZ3523-471AZ	V RESISTOR
	R38	QRD161J-472	RESISTOR
	R39	QRD161J-102	RESISTOR
	R40	QRD161J-103	RESISTOR
⚠	R41	QRZ0077-220X	FUSIBLE RESISTOR
	R42	QRD161J-222	RESISTOR
	R43	QRD161J-222	RESISTOR
	R44	QRD161J-821	RESISTOR
	R45	QRD161J-821	RESISTOR
	R46	QRD161J-222	RESISTOR
	R47	QRD161J-222	RESISTOR
	R48	QRD161J-101	RESISTOR
	R49	QRD161J-101	RESISTOR
	R51	QRD161J-102	RESISTOR
	R52	QRD161J-222	RESISTOR
	C34	QETC1JM-226	E CAPACITOR
	C35	QETC1CM-107	E CAPACITOR
	C36	QETC0JM-107	E CAPACITOR
	C37	QETC1CM-107	E CAPACITOR
	C38	QETC1AM-107	E CAPACITOR
	C39	QETB1AM-228	E CAPACITOR
	C40	QFL41HJ-103	CAPACITOR
	C41	QETC0JM-107	E CAPACITOR
	C45	QETC1HM-335	E CAPACITOR
	C46	QETC1HM-335	E CAPACITOR
	C47	QFL41HJ-472	CAPACITOR
	C48	QFL41HJ-472	CAPACITOR
	C51	QETC1CM-476	E CAPACITOR
	CN3	PU58844-107	CAP HOUSING
	CN4	PU60910-110	CAP HOUSING
	CN6	PU58844-4	CAP HOUSING
	CN7	PU58844-4	CAP HOUSING
⚠	CP3	ICP-N20	CIRCUIT PROTECTOR
⚠	CP4	ICP-N38	CIRCUIT PROTECTOR
⚠	CP5	ICP-N38	CIRCUIT PROTECTOR

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MAIN BOARD ASSEMBLY<03><06><70>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10681A-01	MAIN BOARD ASSY
	PWBA1	PB10681A1	MAIN BOARD ASSY
⚠	RF1	PERF0047-01-01	RF CONVERTER
	BKT1	PQ32369	BRACKET
	CL1	PU55379	MINI CLAMP
	CL2	PU59311-3	WIRE CLAMP
	CL3	PU59311-4	WIRE CLAMP
	ETH-1	PQ43012-1-1	EARTH PLATE
	RV1	PU56800	NYLON RIVET
	SCW1	SDST2605Z	SCREW
	SCW2	SDSF2608Z	SCREW, X2

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	SPC1	PU60010	SPACER, X3
⚠	TB1	PQ20989-3	TERMINAL BOARD
	TB2	PU60415A	CONNECTOR BOARD
	CN101	PU58844-4	CONNECTOR
	CN301	PU59555-4	CONNECTOR
	CN304	PU58844-6	CONNECTOR
	CN305	PU59555-7	CONNECTOR
	CN307	PU59555-4	CONNECTOR
	CN308	PU59555-13	CONNECTOR
	CN309	PU58844-8	CONNECTOR
	CN310	PU58844-2	CONNECTOR
	CN311	PU58844-9	CONNECTOR
		-TERMINAL SECTION<06>-	
	PWBA2	PB10681A2	TERMINAL BOARD ASSY
	Q701	2SB810H,J	TRANSISTOR
	D701	1SS133	DIODE
		OR MA165	DIODE
	R701	QRD161J-393	RESISTOR
	R702	QRD161J-102	RESISTOR
	C704	QCBB1HJ-561	CAPACITOR
	C705	QCBB1HJ-102	CAPACITOR
	C707	QETC1CM-476	E CAPACITOR
	C711	QCBB1HJ-101	CAPACITOR
	L701	PU59152-R22J	COIL
	L702	PU59152-R22J	COIL
	L703	PU59152-5R6J	COIL
	L704	PU59152-5R6J	COIL
	L706	PU59152-R22J	COIL
	L707	PU59152-R22J	COIL
	L708	PU59152-5R6J	COIL
	L709	PU59988-R33KY	COIL
	J701	PU60452	MINI JACK
		-AUDIO SECTION-	
	IC1	LA7295	IC
	Q1	2SC1740S(RS)	TRANSISTOR
		OR 2SC3199(G)	TRANSISTOR
	Q2	2SC1740S(RS)	TRANSISTOR
		OR 2SC3199(G)	TRANSISTOR
	Q4	DTA124ES	TRANSISTOR
	Q5	DTA114ES	TRANSISTOR
	Q6	2SB810H,J	TRANSISTOR
	Q7	DTA124ES	TRANSISTOR
	Q8	DTA124ES	TRANSISTOR
	Q9	DTA124ES	TRANSISTOR
	Q10	DTC124ES	TRANSISTOR
	Q11	DTC124ES	TRANSISTOR
	Q12	2SC1740S(QRS)	TRANSISTOR
		OR 2SC3199(G)	TRANSISTOR
	Q13	DTC124ES	TRANSISTOR
	D1	1SS133	DIODE
		OR MA165	DIODE
	D2	1SS133	DIODE
		OR MA165	DIODE
	D3	1SS133	DIODE
		OR MA165	DIODE
	D4	1SS133	DIODE
		OR MA165	DIODE
	D5	UZ5.1BSB	ZENER DIODE
		OR HZS5.1EB2	ZENER DIODE
		OR RD5.1ES-T1B2	ZENER DIODE
	D6	1SS133	DIODE
		OR MA165	DIODE
	R2	QRD161J-332	RESISTOR
	R3	QRD161J-222	RESISTOR
	R4	QRD161J-473	RESISTOR
	R5	QRD161J-332	RESISTOR
	R6	QRD161J-682	RESISTOR
	R7	QRD161J-332	RESISTOR
	R8	QRD161J-9R1	RESISTOR
	R9	QRD161J-122	RESISTOR
	R10	QRD161J-122	RESISTOR
	R11	QRD161J-102	RESISTOR
	R12	QRD161J-153	RESISTOR
	R13	QRD161J-123	RESISTOR
	R14	QRD161J-223	RESISTOR
	R15	QRD161J-223	RESISTOR
	R16	QRD161J-223	RESISTOR
	R17	QRD161J-103	RESISTOR
	R18	QRD161J-223	RESISTOR
	R19	QRD161J-183	RESISTOR
	R20	QRD161J-104	RESISTOR
	R21	QRD161J-104	RESISTOR
	R22	QRD161J-183	RESISTOR
	R23	QRD161J-223	RESISTOR
	R24	QRD161J-333	RESISTOR
	R25	QRD161J-151	RESISTOR
	R26	QRD161J-122	RESISTOR
	R27	QRD161J-153	RESISTOR
	R28	QRD161J-392	RESISTOR
	R29	QRD161J-391	RESISTOR
	R30	QRD161J-151	RESISTOR
	R33	QRD161J-561	RESISTOR
	R34	QRD161J-223	RESISTOR
	R35	QRD161J-331	RESISTOR
	R36	QRD161J-334	RESISTOR
	R37	QRD161J-103	RESISTOR
	R39	QRD161J-395	RESISTOR
	R40	QRD161J-822	RESISTOR
	R41	QRD161J-273	RESISTOR
	R42	QVZ3523-683AZ	V RESISTOR
		OR QVZ3518-683AZ	V RESISTOR
	R43	QRD161J-153	RESISTOR
	R44	QRD161J-6R8	RESISTOR
	R45	QRD161J-395	RESISTOR
	R48	QRD161J-475	RESISTOR
	R50	QRD161J-103	RESISTOR
	R52	QRD161J-103	RESISTOR
	R53	QRD161J-332	RESISTOR
	C1	QCVB1CM-103	CAPACITOR
	C2	QETC1HM-105	E CAPACITOR
	C3	QETC1CM-476	E CAPACITOR
	C4	QETC1CM-476	E CAPACITOR
	C5	QETC1HM-105	E CAPACITOR
	C6	QFV71HJ-273	TF CAPACITOR
	C7	QFV71HJ-123	TF CAPACITOR
	C8	QFV71HJ-473	TF CAPACITOR
	C9	QFV71HJ-563	TF CAPACITOR
	C10	QETC1EM-335	E CAPACITOR
	C11	QFV71HJ-223	TF CAPACITOR
	C12	QFLC1HJ-122Z	M CAPACITOR
	C13	QFLC1HJ-222Z	M CAPACITOR
	C14	QETC1HM-334	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C15	PU60550-105	E CAPACITOR
	C16	QEB51CM-685	E CAPACITOR
	C17	QFV71HJ-103	TF CAPACITOR
	C18	QETC1HM-105	E CAPACITOR
	C20	QFLC1HJ-272Z	CAPACITOR
	C21	QETC1CM-106	E CAPACITOR
	C22	QCC11EJ-822	CAPACITOR
	C23	QCBB1HJ-331	CAPACITOR
	C24	QFV71HJ-473	TF CAPACITOR
	C25	QETC1CM-106	E CAPACITOR
	C26	QCXB1CM-272	CAPACITOR
	C27	QFLC1HJ-392Z	M CAPACITOR
	C30	QCBB1HJ-102	CAPACITOR
	L1	PU58308-682J	COIL
	L2	PU58308-103J	COIL
	L3	PU48530-471J	COIL
⚠	T1	PU60510-2	OSC TRANSFORMER
	TP1	PU57545	TEST PIN, X3
⚠	CP1	ICP-F10	CIRCUIT PROTECTOR

-VIDEO SECTION-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	IC101	PB20288A	C.MOD.(JA057)
	IC102	XRA7106LS	IC
	OR	BA7106LS	IC
	IC201	XRA7106LS	IC
	OR	BA7106LS	IC
	IC202	PB20227A	C.MOD (JA047)
	IC301	LVA522S	IC
	OR	NJM2234S	IC
	IC302	LVA521S	IC
	OR	NJM2233AS	IC
	OR	NJM2233BS	IC
	IC303	M5239L	IC
	IC304	LVA522S	IC
	OR	NJM2234S	IC
	IC305	M50255P	IC
	IC501	PB20290B	JOG M. JA059-01
	IC502	LVA522S	IC
	OR	NJM2234S	IC
	IC503	LVA521S	IC
	OR	NJM2233AS	IC
	OR	NJM2233BS	IC
	Q101	2SA1267(YG)-TJK	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q102	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740(RS)	TRANSISTOR
	Q103	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740(RS)	TRANSISTOR
	Q104	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740(RS)	TRANSISTOR
	Q105	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740(RS)	TRANSISTOR
	Q201	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740S(RS)	TRANSISTOR
	Q202	2SA1267(YG)-TJK	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q203	2SA1267(YG)-TJK	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q204	DTC144ES	TRANSISTOR
	Q205	DTC124ES	TRANSISTOR
	Q206	2SA1267(YG)-TJK	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q207	DTA144ES	TRANSISTOR
	Q208	DTC124ES	TRANSISTOR
	Q209	DTC124ES	TRANSISTOR
	Q210	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740S(RS)	TRANSISTOR
	Q211	DTC144ES	TRANSISTOR
	Q212	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740S(RS)	TRANSISTOR
	Q301	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740S(RS)	TRANSISTOR
	Q302	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740S(RS)	TRANSISTOR
	Q303	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740S(RS)	TRANSISTOR
	Q304	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740S(RS)	TRANSISTOR
	Q305	DTA124ES	TRANSISTOR
	Q306	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740S(RS)	TRANSISTOR
	Q307	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740S(RS)	TRANSISTOR
	Q309	2SA1267(YG)-TJK	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q311	DTC144ES	TRANSISTOR
	Q312	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740S(RS)	TRANSISTOR
	Q313	2SA1267(YG)-TJK	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q314	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740S(RS)	TRANSISTOR
	Q316	DTC144ES	TRANSISTOR
	Q317	2SA1267(YG)-TJK	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q318	2SA1267(YG)-TJK	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q319	2SA1267(YG)-TJK	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q320	DTA124ES	TRANSISTOR
	Q321	DTC124ES	TRANSISTOR
	Q322	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740S(RS)	TRANSISTOR
	Q323	2SA1267(YG)-TJK	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q324	DTA124ES	TRANSISTOR
	Q325	DTA124ES	TRANSISTOR
	Q326	DTA114ES	TRANSISTOR
	Q327	DTC144ES	TRANSISTOR
	Q501	2SA1267(YG)-TJK	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q502	DTC144ES	TRANSISTOR
	Q503	DTC144ES	TRANSISTOR
	Q504	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740(RS)	TRANSISTOR
	Q505	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740(RS)	TRANSISTOR
	Q506	DTA124ES	TRANSISTOR
	Q509	DTC144ES	TRANSISTOR
	Q510	2SC3199(GB)-TJK	TRANSISTOR
	OR	2SC1740(RS)	TRANSISTOR
	Q511	DTA124ES	TRANSISTOR
	Q901	DTC124ES	TRANSISTOR
	D201	1SS133	DIODE
	OR	MA165	DIODE
	D202	1SS133	DIODE
	OR	MA165	DIODE
	D203	1SS133	DIODE
	OR	MA165	DIODE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D204	1SS133	DIODE
		OR MA165	DIODE
	D205	1SS133	DIODE
		OR MA165	DIODE
	D206	1SS133	DIODE
		OR MA165	DIODE
	D207	1SS133	DIODE
		OR MA165	DIODE
	D208	1SS133	DIODE
		OR MA165	DIODE
	D209	1SS133	DIODE
		OR MA165	DIODE
	D210	1SS133	DIODE
		OR MA165	DIODE
	D211	1SS133	DIODE
		OR MA165	DIODE
	D212	1SS133	DIODE
		OR MA165	DIODE
	D213	1SS133	DIODE
		OR MA165	DIODE
	D214	1SS133	DIODE
		OR MA165	DIODE
	D301	1SS133	DIODE
		OR MA165	DIODE
	D302	1SS133	DIODE
		OR MA165	DIODE
	D303	1SS133	DIODE
		OR MA165	DIODE
	D304	1SS133	DIODE
		OR MA165	DIODE
	D305	1SS133	DIODE
		OR MA165	DIODE
	D306	1SS133	DIODE
		OR MA165	DIODE
	D307	1SS133	DIODE
		OR MA165	DIODE
	D308	1SS133	DIODE
		OR MA165	DIODE
	D309	1SS133	DIODE
		OR MA165	DIODE
	D310	1SS133	DIODE
		OR MA165	DIODE
	D311	1SS133	DIODE
		OR MA165	DIODE
	D312	1SS133	DIODE
		OR MA165	DIODE
	D314	1SS133	DIODE
		OR MA165	DIODE
	D315	1SS133	DIODE
		OR MA165	DIODE
	D316	1SS133	DIODE
		OR MA165	DIODE
	D317	1SS133	DIODE
		OR MA165	DIODE
	D318	1SS133	DIODE
		OR MA165	DIODE
	D319	1SS133	DIODE
		OR MA165	DIODE
	D320	1SS133	DIODE
		OR MA165	DIODE
	D321	1SS133	DIODE
		OR MA165	DIODE
	D322	1SS133	DIODE
		OR MA165	DIODE
	D323	1SS133	DIODE
		OR MA165	DIODE
	D325	1SS133	DIODE
		OR MA165	DIODE
	D326	1SS133	DIODE
		OR MA165	DIODE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D501	1SS133	DIODE
		OR MA165	DIODE
	D502	1SS133	DIODE
		OR MA165	DIODE
	D503	1SS133	DIODE
		OR MA165	DIODE
	D504	1SS133	DIODE
		OR MA165	DIODE
	D505	1SS133	DIODE
		OR MA165	DIODE
	D506	1SS133	DIODE
		OR MA165	DIODE
	D507	1SS133	DIODE
		OR MA165	DIODE
	D508	1SS133	DIODE
		OR MA165	DIODE
	D509	1SS133	DIODE
		OR MA165	DIODE
	D510	1SS133	DIODE
		OR MA165	DIODE
	D511	1SS133	DIODE
		OR MA165	DIODE
	D512	1SS133	DIODE
		OR MA165	DIODE
	D513	1SS133	DIODE
		OR MA165	DIODE
	D514	1SS133	DIODE
		OR MA165	DIODE
	D515	1SS133	DIODE
		OR MA165	DIODE
	D516	1SS133	DIODE
		OR MA165	DIODE
	D517	1SS133	DIODE
		OR MA165	DIODE
	D518	1SS133	DIODE
		OR MA165	DIODE
	D519	1SS133	DIODE
		OR MA165	DIODE
	D520	1SS133	DIODE
		OR MA165	DIODE
	D521	1SS133	DIODE
		OR MA165	DIODE
	D522	1SS133	DIODE
		OR MA165	DIODE
	D523	1SS133	DIODE
		OR MA165	DIODE
	D901	1SS133	DIODE
	R101	QRD161J-103	RESISTOR
	R102	QRD161J-222	RESISTOR
	R103	QRD161J-122	RESISTOR
	R104	QRD161J-102	RESISTOR
	R105	QRD161J-222	RESISTOR
	R106	QRD161J-152	RESISTOR
	R107	QRD161J-222	RESISTOR
	R108	QRD161J-333	RESISTOR
	R109	QRD161J-273	RESISTOR
	R110	QRD161J-914	RESISTOR
	R111	QRD161J-104	RESISTOR
	R112	QRD161J-273	RESISTOR
	R113	QRD161J-273	RESISTOR
	R114	QRD161J-102	RESISTOR
	R202	QRD161J-102	RESISTOR
	R203	QRD161J-102	RESISTOR
	R204	QRD161J-333	RESISTOR
	R205	QRD161J-223	RESISTOR
	R206	QRD161J-332	RESISTOR
	R207	QRD161J-222	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R208	QRD161J-153	RESISTOR
	R209	QRD161J-822	RESISTOR
	R210	QRD161J-182	RESISTOR
	R211	QRD161J-122	RESISTOR
	R212	QRD161J-103	RESISTOR
	R213	QRD161J-153	RESISTOR
	R214	QRD161J-914	RESISTOR
	R215	QRD161J-104	RESISTOR
	R216	QRD161J-133	RESISTOR
	R217	QRD161J-332	RESISTOR
	R218	QRD161J-103	RESISTOR
	R219	QRD161J-333	RESISTOR
	R220	QRD161J-273	RESISTOR
	R221	QRD161J-103	RESISTOR
	R222	QRD161J-223	RESISTOR
	R223	QRD161J-112	RESISTOR
	R224	QRD161J-271	RESISTOR
	R225	QRD161J-271	RESISTOR
	R226	QRD167J-391	RESISTOR
	R227	QRD161J-821	RESISTOR
	R228	QRD161J-471	RESISTOR
	R229	QRD161J-102	RESISTOR
	R230	QRD161J-102	RESISTOR
	R231	QRD161J-472	RESISTOR
	R232	QRD161J-153	RESISTOR
	R233	QRD161J-153	RESISTOR
	R234	QRD161J-391	RESISTOR
	R235	QRD161J-102	RESISTOR
	R236	QRD161J-273	RESISTOR
	R237	QRD161J-102	RESISTOR
	R238	QRD161J-102	RESISTOR
	R239	QRD161J-332	RESISTOR
	R240	QRD161J-393	RESISTOR
	R241	QRD161J-331	RESISTOR
	R242	QRD161J-222	RESISTOR
	R243	QRD161J-332	RESISTOR
	R244	QRD161J-332	RESISTOR
	R245	QRD161J-682	RESISTOR
	R246	QRD161J-102	RESISTOR
	R299	QRD167J-0R0	RESISTOR
	R301	QRD161J-222	RESISTOR
	R302	QRD161J-333	RESISTOR
	R303	QRD161J-333	RESISTOR
	R304	QRD161J-102	RESISTOR
	R305	QRD161J-102	RESISTOR
	R306	QRD161J-102	RESISTOR
	R307	QRD161J-182	RESISTOR
	R308	QRD161J-333	RESISTOR
	R309	QRD161J-333	RESISTOR
	R310	QRD161J-331	RESISTOR
	R311	QVZ3518-102AZ	V RESISTOR
		OR QVZ3523-102	V RESISTOR
		OR QVZ3523-102AZ	V RESISTOR
		OR QVZ3518-102	V RESISTOR
	R312	QRD161J-333	RESISTOR
	R313	QRD161J-333	RESISTOR
	R314	QRD161J-122	RESISTOR
	R315	QRD161J-182	RESISTOR
	R316	QRD161J-333	RESISTOR
	R317	QRD161J-333	RESISTOR
	R318	QRD161J-331	RESISTOR
	R319	QVZ3518-102AZ	V RESISTOR
		OR QVZ3523-102	V RESISTOR
		OR QVZ3523-102AZ	V RESISTOR
		OR QVZ3518-102	V RESISTOR
	R320	QRD161J-182	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R321	QRD161J-333	RESISTOR
	R322	QRD161J-333	RESISTOR
	R324	QVZ3518-102AZ	V RESISTOR
		OR QVZ3523-102	V RESISTOR
		OR QVZ3523-102AZ	V RESISTOR
		OR QVZ3518-102	V RESISTOR
	R326	QRD161J-152	RESISTOR
	R327	QVZ3518-222AZ	V RESISTOR
		OR QVZ3523-222	V RESISTOR
		OR QVZ3523-222AZ	V RESISTOR
		OR QVZ3518-222	V RESISTOR
	R328	QRD161J-153	RESISTOR
	R329	QRD161J-822	RESISTOR
	R330	QRD161J-101	RESISTOR
	R331	QRD161J-103	RESISTOR
	R333	QRD161J-332	RESISTOR
	R334	QRD161J-153	RESISTOR
	R335	QRD161J-123	RESISTOR
	R336	QRD161J-103	RESISTOR
	R338	QRD161J-561	RESISTOR
	R340	QRD161J-332	RESISTOR
	R341	QRD161J-682	RESISTOR
	R342	QRD161J-103	RESISTOR
	R343	QRD161J-222	RESISTOR
	R344	QRD161J-102	RESISTOR
	R345	QRD161J-102	RESISTOR
	R346	QRD161J-123	RESISTOR
	R347	QRD161J-102	RESISTOR
	R348	QRD161J-103	RESISTOR
	R349	QRD161J-750	RESISTOR
	R350	QRD123J-391SX	RESISTOR
	R351	QRD161J-682	RESISTOR
	R352	QRD161J-101	RESISTOR
	R354	QRD161J-472	RESISTOR
	R355	QRD161J-103	RESISTOR
	R356	QRD161J-182	RESISTOR
	R357	QRD161J-183	RESISTOR
	R358	QRD161J-103	RESISTOR
	R359	QRD161J-102	RESISTOR
	R361	QRD161J-101	RESISTOR
	R362	QVZ3518-332AZ	V RESISTOR
		OR QVZ3523-332	V RESISTOR
		OR QVZ3523-332AZ	V RESISTOR
		OR QVZ3518-332	V RESISTOR
	R363	QRD161J-152	RESISTOR
	R364	QRD161J-561	RESISTOR
	R365	QRD161J-333	RESISTOR
	R366	QRD161J-153	RESISTOR
	R367	QRD161J-182	RESISTOR
	R368	QRD161J-222	RESISTOR
	R369	QRD161J-222	RESISTOR
	R370	QRD161J-182	RESISTOR
	R371	QRD161J-182	RESISTOR
	R372	QRD161J-222	RESISTOR
	R373	QRD161J-471	RESISTOR
	R374	QRD161J-561	RESISTOR
	R375	QRD161J-103	RESISTOR
	R376	QRD161J-223	RESISTOR
	R377	QRD161J-103	RESISTOR
	R378	QRD161J-750	RESISTOR
	R379	QRD161J-103	RESISTOR
	R382	QRD161J-103	RESISTOR
	R385	QRD161J-101	RESISTOR
	R387	QRD161J-273	RESISTOR
	R501	QRD161J-103	RESISTOR
	R502	QRD161J-153	RESISTOR
	R503	QRD161J-222	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R504	QVZ3518-222AZ	V RESISTOR
	OR	QVZ3523-222	V RESISTOR
	OR	QVZ3523-222AZ	V RESISTOR
	OR	QVZ3518-222	V RESISTOR
	R505	QRD161J-153	RESISTOR
	R506	QVZ3518-332AZ	V RESISTOR
	OR	QVZ3523-332	V RESISTOR
	OR	QVZ3523-332AZ	V RESISTOR
	OR	QVZ3518-332	V RESISTOR
	R507	QRD161J-333	RESISTOR
	R508	QRD161J-222	RESISTOR
	R509	QRD161J-820	RESISTOR
	R510	QRD161J-222	RESISTOR
	R511	QRD161J-102	RESISTOR
	R512	QRD161J-473	RESISTOR
	R513	QRD161J-223	RESISTOR
	R514	QVZ3518-331AZ	V RESISTOR
	OR	QVZ3523-331	V RESISTOR
	OR	QVZ3523-331AZ	V RESISTOR
	OR	QVZ3518-331	V RESISTOR
	R515	QRD161J-221	RESISTOR
	R516	QRD161J-561	RESISTOR
	R517	QRD161J-472	RESISTOR
	R518	QRD161J-103	RESISTOR
	R519	QRD161J-472	RESISTOR
	R520	QRD161J-103	RESISTOR
	R521	QRD161J-101	RESISTOR
	R523	QRD161J-153	RESISTOR
	R525	QRD161J-273	RESISTOR
	R526	QRD161J-820	RESISTOR
	R530	QRD161J-152	RESISTOR
	R531	QRD161J-101	RESISTOR
	R532	QRD161J-103	RESISTOR
	R533	QRD161J-182	RESISTOR
	R534	QRD161J-472	RESISTOR
	R535	QRD161J-472	RESISTOR
	R536	QRD161J-333	RESISTOR
	R537	QRD161J-562	RESISTOR
	R538	QRD161J-472	RESISTOR
	R539	QRD161J-101	RESISTOR
	R540	QRD161J-273	RESISTOR
	R541	QRD161J-272	RESISTOR
	R542	QRD161J-821	RESISTOR
	R901	QRD161J-0R0	RESISTOR
	C102	QCSB1HJ-330	CAPACITOR
	C103	QCBB1HJ-121	CAPACITOR
	C104	QCVB1CN-103	CAPACITOR
	C105	QCVB1CN-103	CAPACITOR
	C106	QCVB1CN-103	CAPACITOR
	C107	QETC0JM-476	E CAPACITOR
	C108	QETC1CM-106	E CAPACITOR
	C109	QETC1EM-335	E CAPACITOR
	C110	QCBB1HJ-471	CAPACITOR
	C111	QFN31HJ-471	M CAPACITOR
	C112	QCBB1HJ-151	CAPACITOR
	C113	QCXB1CN-472	CAPACITOR
	C114	QCSB1HK-4R7	CAPACITOR
	C115	QCVB1CN-103	CAPACITOR
	C116	QETC0JM-107	E CAPACITOR
	C117	QETC0JM-476	E CAPACITOR
	C118	QCVB1CN-103	CAPACITOR
	C201	QFN31HJ-473	M CAPACITOR
	C202	QCBB1HJ-820	CAPACITOR
	C203	QCVB1CN-103	CAPACITOR
	C204	QCVB1CN-103	CAPACITOR
	C206	QCVB1CN-103	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C207	QCVB1CN-103	CAPACITOR
	C208	QCVB1CN-103	CAPACITOR
	C209	QEK61HM-225	E CAPACITOR
	C210	QEK61HM-335	E CAPACITOR
	C211	QCBB1HJ-471	CAPACITOR
	C212	QCVB1CN-103	CAPACITOR
	C213	QCVB1CN-103	CAPACITOR
	C214	QCVB1CN-103	CAPACITOR
	C215	QFN31HJ-471	M CAPACITOR
	C216	QCBB1HJ-101	CAPACITOR
	C217	QCXB1CN-472	CAPACITOR
	C218	QCSB1HK-4R7	CAPACITOR
	C219	QCSB1HJ-220	CAPACITOR
	C220	QCVB1CN-103	CAPACITOR
	C221	QEK60JM-107	E CAPACITOR
	C222	QCSB1HJ-470	CAPACITOR
	C223	QCVB1CN-103	CAPACITOR
	C224	QCVB1CN-103	CAPACITOR
	C225	QCVB1CN-103	CAPACITOR
	C226	QFN31HJ-563	M CAPACITOR
	C227	QFN31HJ-224	M CAPACITOR
	C228	QETC1HM-475	E CAPACITOR
	C229	QETC1HM-474	E CAPACITOR
	C230	QCSB1HJ-150	CAPACITOR
	C231	QETC1CM-106	E CAPACITOR
	C232	QEK60JM-107	E CAPACITOR
	C234	QCVB1CN-103	CAPACITOR
	C235	QETC1HM-474	E CAPACITOR
	C236	QETC0JM-337	E CAPACITOR
	C237	QCFB1EZ-223	CAPACITOR
	C238	QETC1HM-224	E CAPACITOR
	C301	QCVB1CN-103	CAPACITOR
	C302	QCBB1HJ-102	CAPACITOR
	C303	QCVB1CN-103	CAPACITOR
	C304	QEK60JM-476	E CAPACITOR
	C305	QEK60JM-476	E CAPACITOR
	C306	QCVB1CN-103	CAPACITOR
	C307	QCVB1CN-103	CAPACITOR
	C308	QCVB1CN-103	CAPACITOR
	C309	QCVB1CN-103	CAPACITOR
	C310	QCVB1CN-103	CAPACITOR
	C311	QCVB1CN-103	CAPACITOR
	C312	QCVB1CN-103	CAPACITOR
	C313	QCVB1CN-103	CAPACITOR
	C314	QCVB1CN-103	CAPACITOR
	C315	QCVB1CN-103	CAPACITOR
	C316	QCVB1CN-103	CAPACITOR
	C319	QCVB1CN-103	CAPACITOR
	C320	QCVB1CN-103	CAPACITOR
	C321	QETC0JM-476	E CAPACITOR
	C322	QETC1HM-105	E CAPACITOR
	C323	QETC0JM-476	E CAPACITOR
	C324	QETC0JM-477	E CAPACITOR
	C325	QCVB1CN-103	CAPACITOR
	C326	QETC0JM-476	E CAPACITOR
	C327	QETC1CM-106	E CAPACITOR
	C328	QFN31HJ-123	M CAPACITOR
	C329	QFN31HJ-123	M CAPACITOR
	C330	QCSB1HJ-390	CAPACITOR
	C331	QCVB1CN-103	CAPACITOR
	C332	QCVB1CN-103	CAPACITOR
	C333	QETC0JM-476	E CAPACITOR
	C334	QCVB1CN-103	CAPACITOR
	C335	QEK60JM-476	E CAPACITOR
	C336	QCVB1CN-103	CAPACITOR
	C337	QCVB1CN-103	CAPACITOR
	C338	QCVB1CN-103	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C339	QCSB1HJ-470	CAPACITOR
	C340	QCBB1HJ-121	CAPACITOR
	C341	QCBB1HJ-121	CAPACITOR
	C342	QCVB1CN-103	CAPACITOR
	C343	QCVB1CN-103	CAPACITOR
	C344	QCVB1CN-103	CAPACITOR
	C345	QETC0JM-476	E CAPACITOR
	C346	QCVB1CN-103	CAPACITOR
	C347	QCVB1CN-103	CAPACITOR
	C348	QCVB1CN-103	CAPACITOR
	C349	QCVB1CN-103	CAPACITOR
	C350	QETC0JM-476	E CAPACITOR
	C351	QEK60JM-476	E CAPACITOR
	C352	QCVB1CN-103	CAPACITOR
	C353	QFN31HJ-473	M CAPACITOR
	C354	QEP61AM-226	NP E CAPACITOR
	C357	QCVB1CN-103	CAPACITOR
	C358	QCVB1CN-103	CAPACITOR
	C359	QCVB1CN-103	CAPACITOR
	C360	QCBB1HJ-221	CAPACITOR
	C361	QCSB1HJ-390	CAPACITOR
	C362	QETC1CM-106	E CAPACITOR
	OR	QET61CM-106	E CAPACITOR
	C363	QCBB1HJ-102	CAPACITOR
	C501	QCVB1CN-103	CAPACITOR
	C502	QCVB1CN-103	CAPACITOR
	C503	QCVB1CN-103	CAPACITOR
	C504	QCVB1CN-103	CAPACITOR
	C505	QCVB1CN-103	CAPACITOR
	C506	QCVB1CN-103	CAPACITOR
	C507	QCVB1CN-103	CAPACITOR
	C508	QETC0JM-476	E CAPACITOR
	C509	QCVB1CN-103	CAPACITOR
	C512	QCVB1CN-103	CAPACITOR
	C516	QCVB1CN-103	CAPACITOR
	C517	QCVB1CN-103	CAPACITOR
	C518	QETC0JM-476	E CAPACITOR
	C519	QCVB1CN-103	CAPACITOR
	C520	QCVB1CN-103	CAPACITOR
	C522	QCVB1CN-103	CAPACITOR
	L101	PU48530-101K	COIL
	L102	PU48530-101K	COIL
	L103	PU59152-390J	COIL
	L104	PU60655	COIL
	L105	PU48530-101K	COIL
	L201	PU48530-222J	COIL
	L202	PU59152-330J	COIL
	L203	PU48530-101K	COIL
	L204	PU48530-271J	COIL
	L205	PU59153-822J	COIL
	L206	PU48530-101K	COIL
	L207	PU60655	COIL
	L208	PU59152-150J	COIL
	L301	PU48530-101K	COIL
	L302	PU48530-101K	COIL
	L303	PU48530-101K	COIL
	L304	PU48530-180J	COIL
	L305	PU48530-101K	COIL
	L306	PU59152-180J	COIL
	L307	PU48530-101K	COIL
	L308	PU59152-101K	COIL
	L309	PU59152-120J	COIL
	L310	PU59152-221J	COIL
	L311	PU59152-560J	COIL
	L312	PU48530-101K	COIL
	L313	PU48530-101K	COIL
	L314	PU48530-101K	COIL
	L315	PU48530-222J	COIL
	L316	PU59152-470J	COIL
	L501	PU59152-150J	COIL
	L502	PU59152-150J	COIL
	L503	PU48530-101K	COIL
	L506	PU48530-101K	COIL
	L507	PU48530-101K	COIL
	L508	PU48530-101K	COIL
	EQ101	PU53501-11	EQUALIZER
	OR	PU53501-6	EQUALIZER
	EQ201	PU53501-11	EQUALIZER
	OR	PU53501-6	EQUALIZER
	EQ302	PU54838	EQUALIZER
	OR	PU60714	EQUALIZER
	LPF201	PU58022	LOW PASS FILTER
	LPF301	PU60128-2	LOW PASS FILTER
	BPF201	PU61096	BAND PASS FILTER
	BPF202	PU60654-2	BAND PASS FILTER
	OR	PU60654	BAND PASS FILTER
	CF201	PU57073	CERAMIC FILTER
	DL201	PU60496	DELAY LINE
	DL202	PU60340-2	COMB FILTER
	OR	PU60490	COMB FILTER
	OR	PU58971-3	2H DELAY LINE
	OR	PU60222	2H DELAY LINE
	DL301	PU60058-2	DELAY LINE
	OR	PU60322	DELAY LINE
	OR	PU60058	DELAY LINE
	DL501	PU54819	DELAY LINE
	LC101	PU61087	COIL
	OR	PU60221	COIL
	LC102	PU61086	COIL
	OR	PU60220	COIL
⚠	X201	PU60653	CRYSTAL UNITS
	TP1	PU57545	TEST PIN, X5
	TP2	PU57545	TEST PIN, X2
	TP3	PU57545	TEST PIN, X5
	TP4	PU50766-2	TEST PIN, X5

-JUMP DET. BOARD ASSEMBLY<70>-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA3	PB30081A	JUMP DET. BOARD ASSY
	IC401	BA7023L	IC
	IC402	BU4030B	IC
	IC403	BA222	IC
	IC404	TC4013BP	IC
	Q401	2SA1267(YG)-TJK	TRANSISTOR
	OR	2SA1309R,S	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q611	DTC124ES	TRANSISTOR
	D411	1SS133	DIODE
	OR	MA165	DIODE
	D611	1SS133	DIODE
	OR	MA165	DIODE
	D612	1SS133	DIODE
	OR	MA165	DIODE
	D613	1SS133	DIODE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
		OR MA165	DIODE
	D614	1SS133	DIODE
		OR MA165	DIODE
	D617	1SS133	DIODE
		OR MA165	DIODE
	R401	QRD161J-222	RESISTOR
	R402	QRD161J-391	RESISTOR
	R403	QRD161J-223	RESISTOR
	R404	QRD161J-472	RESISTOR
	R405	QRD161J-124	RESISTOR
	R406	QRD161J-184	RESISTOR
	R407	QRD161J-823	RESISTOR
	R408	QRD161J-153	RESISTOR
	R409	QRD161J-105	RESISTOR
	R410	QVZ3521-473	V RESISTOR
	R411	QRD161J-105	RESISTOR
	R412	QRD161J-473	RESISTOR
	R413	QRD161J-104	RESISTOR
	R414	QRD161J-223	RESISTOR
	R633	QRD161J-103	RESISTOR
	R643	QRD161J-222	RESISTOR
	R644	QRD161J-222	RESISTOR
	R645	QRD161J-103	RESISTOR
	C401	QFN31HJ-152	M CAPACITOR
	C402	QETC1HM-105	E CAPACITOR
	C403	QFN31HJ-222	M CAPACITOR
	C404	QFN31HJ-332	M CAPACITOR
	C405	QEK61CM-106	E CAPACITOR
	C406	QETC0JM-107	E CAPACITOR
	C407	QCVB1CN-103	CAPACITOR
	C408	QFN31HJ-103	M CAPACITOR
	C409	QFN31HJ-273	M CAPACITOR
	C410	QETC1HM-105	E CAPACITOR
	C411	QCB81HJ-331	CAPACITOR
	C412	QETC1HM-105	E CAPACITOR
	C413	QFN31HJ-103	M CAPACITOR
	C414	QCVB1CN-103	CAPACITOR
	C415	QFN31HJ-273	M CAPACITOR
	C416	QCVB1CN-103	CAPACITOR
	C417	QETC1AM-476	E CAPACITOR
	L401	PU48530-101K	COIL
	L402	PU48530-101K	COIL
	JP401	PU60330-114	TERMINAL
	JP402	PU60330-104	TERMINAL

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MECHACON BOARD ASSEMBLY <04>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20456F	MECHACON BOARD ASSY
	IC601	M37418M6-366SP	IC
		OR M37418E6-292SP	IC
	Q601	DTC144ES	TRANSISTOR
	D601	HZS7.5EB2	ZENER DIODE
		OR MTZ7.5B	ZENER DIODE
	D602	1SS133	DIODE
		OR MA165	DIODE
	D603	1SS133	DIODE
		OR MA165	DIODE
	D604	1SS133	DIODE
		OR MA165	DIODE
	D605	1SS133	DIODE
		OR MA165	DIODE
	R601	QRD161J-332	RESISTOR
	R602	QRD161J-332	RESISTOR
	R603	QRD161J-103	RESISTOR
	R604	QRD161J-472	RESISTOR
	R605	QRD161J-102	RESISTOR
	R606	QRD161J-472	RESISTOR
	R607	QRD161J-102	RESISTOR
	R608	QRD161J-472	RESISTOR
	R609	QRD161J-472	RESISTOR
	R610	QRD161J-102	RESISTOR
	R611	QRD161J-102	RESISTOR
	R612	QRD161J-472	RESISTOR
	R613	QRD161J-153	RESISTOR
	R614	QRD161J-103	RESISTOR
	R616	QRD161J-103	RESISTOR
	R617	QRD161J-105	RESISTOR
	R618	QRD161J-103	RESISTOR
	R619	QRD161J-472	RESISTOR
	R620	QRD161J-472	RESISTOR
	R621	QRD161J-472	RESISTOR
	R622	QRD161J-472	RESISTOR
	R623	QRD161J-472	RESISTOR
	R624	QRD161J-472	RESISTOR
	R626	QRD161J-102	RESISTOR
	R627	QRD161J-472	RESISTOR
	R628	QRD161J-472	RESISTOR
	R629	QRD161J-472	RESISTOR
	R630	QRD161J-472	RESISTOR
	R631	QRD161J-102	RESISTOR
	R632	QRD161J-471	RESISTOR
	R633	QRD161J-103	RESISTOR
	R634	QRD161J-822	RESISTOR
	R635	QRD161J-563	RESISTOR
	R636	QRD161J-124	RESISTOR
	R637	QRD161J-333	RESISTOR
	R638	QRD161J-393	RESISTOR
	R639	QRD161J-224	RESISTOR
	R640	QRD161J-103	RESISTOR
	R641	QRD161J-103	RESISTOR
	R642	QRD161J-103	RESISTOR
	R643	QRD161J-103	RESISTOR
	R644	QRD161J-152	RESISTOR
	R645	QRD161J-333	RESISTOR
	R646	QRD161J-102	RESISTOR
	R647	QRD161J-103	RESISTOR
	R648	QRD161J-472	RESISTOR
	R699	QRD161J-0R0	RESISTOR
	RA601	QRB035J-103XM	RESISTOR ARRAY
	C601	QEK61HM-105	E CAPACITOR
	C602	QEK60JM-107	E CAPACITOR
	C603	QEK61EM-335	E CAPACITOR
	C604	QCFB1EZ-223	CAPACITOR
	C605	QCC11EK-104	CAPACITOR
	C606	QCBB1HJ-121	CAPACITOR
	C608	QCBB1HJ-471	CAPACITOR
	C609	QETC1CM-337	E CAPACITOR
	L601	PU59152-2R2J	COIL
⚠	CF601	PU60440	RESONATOR
⚠		OR PU60440-2	C RESONATER
	TH601	NTH5D473KB	THERMISTOR
		OR ERT-D2ZHK473S	NEGA THERMISTOR
		OR NTH5D473KA	RESISTOR
	TP601	PU57545	TEST PIN
	TP602	PU57545	TEST PIN

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	CN601	PEMC0722-014	WIRE TRAP
	OR	PEMC0753-014	WIRE TRAP
	CN602	PU59555-4	CAP HOUSING
	CN603	PU59933-8	WIRE TRAP
	CN604	PU61044-10	CAP HOUSING
	OR	PEMC0848-010	WIRE TRAP
	CN605	PU58844-6	CONNECTOR
	CN606	PU59555-8	CONNECTOR
	CN607	PU59555-13	CONNECTOR
	CN608	PU59555-4	CAP HOUSING
	CN610	PU59933-12	WIRE TRAP
⚠	CP601	ICP-F25	CIRCUIT PROTECTOR

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VIDEO UNIT BOARD ASSEMBLY <05>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10385A-03	VIDEO UNIT BOARD ASSY
	IC1	PB20166F	Y MODULE ASSY
⚠	IC2	MSM6866RS	IC
⚠	IC3	MSM6967RS	IC
	IC4	BA7131F	IC
	IC201	PU22517C	COLOR MODULE ASSY
	Q1	DTC124EU	TRANSISTOR
	Q2	DTC124EU	TRANSISTOR
	Q3	DTA144WU	TRANSISTOR
	Q4	DTC144EU	TRANSISTOR
	Q5	DTA124EU	TRANSISTOR
	Q7	DTA144EU	TRANSISTOR
	Q8	2SC4081(RS)	TRANSISTOR
	Q9	DTC144EU	TRANSISTOR
	Q11	2SA1576(RS)	TRANSISTOR
	Q12	2SC4081(RS)	TRANSISTOR
	Q13	2SA1576(RS)	TRANSISTOR
	Q14	2SC4081(RS)	TRANSISTOR
	Q15	DTA114EU	TRANSISTOR
	Q16	DTC144EU	TRANSISTOR
	Q201	DTC144WU	TRANSISTOR
	D1	DAN202U	DIODE
	D2	1SS133	DIODE
	OR	MA165	DIODE
	D3	DAN202U	DIODE
	D4	1SS133	DIODE
	OR	MA165	DIODE
	D5	1SS292	DIODE
	D6	DAP202U	DIODE
	D7	DAP202U	DIODE
	D9	RD9.1ESB2	ZENER DIODE
	OR	UZ9.1BSB	ZENER DIODE
	D10	RD9.1ESB2	ZENER DIODE
	OR	UZ9.1BSB	ZENER DIODE
	D11	DAN202U	DIODE
	D12	1SS133	DIODE
	OR	MA165	DIODE
	D13	1SS133	DIODE
	OR	MA165	DIODE
	D14	1SS133	DIODE
	OR	MA165	DIODE
	D201	1SS133	DIODE
	OR	MA165	DIODE
	D202	DA204U	DIODE
	D204	DAP202U	DIODE
	D205	DAP202U	DIODE
	R1	QRSA08J-103YN	RESISTOR
	R2	QRSA08J-103YN	RESISTOR
	R3	QRSA08J-272YN	RESISTOR
	R4	QRD161J-103	RESISTOR
	R5	QRD161J-222	RESISTOR
	R6	QRSA08J-102YN	RESISTOR
	R8	QRSA08J-681YN	RESISTOR
	R9	QRSA08J-272YN	RESISTOR
	R10	QRSA08J-562YN	RESISTOR
	R11	QRSA08J-103YN	RESISTOR
	R12	QRSA08J-104YN	RESISTOR
	R13	QRSA08J-272YN	RESISTOR
	R14	QRSA08J-334YN	RESISTOR
	R15	QRSA08J-103YN	RESISTOR
	R16	QRSA08J-221YN	RESISTOR
	R17	QRSA08J-222YN	RESISTOR
	R18	QRSA08J-221YN	RESISTOR
	R20	QRD161J-102	RESISTOR
	R21	QVZ3518-222	V RESISTOR,NTSC NC BAL
	OR	QVZ3523-222.	V RESISTOR,NTSC NC BAL
	R22	QRSA08J-182YN	RESISTOR
	R23	QRSA08J-102YN	RESISTOR
	R24	QRSA08J-392YN	RESISTOR
	R25	QRSA08J-181YN	RESISTOR
	R26	QRSA08J-102YN	RESISTOR
	R27	QVZ3518-222	V RESISTOR,PAL NC BAL
	OR	QVZ3518-222AZ	V RESISTOR,PAL NC BAL
	OR	QVZ3523-222	V RESISTOR,PAL NC BAL
	OR	QVZ3523-222AZ	V RESISTOR,PAL NC BAL
	R28	QRSA08J-222YN	RESISTOR
	R29	QRSA08J-102YN	RESISTOR
	R30	QRSA08J-181YN	RESISTOR
	R31	QRSA08J-472YN	RESISTOR
	R33	QRSA08J-472YN	RESISTOR
	R34	QRSA08J-103YN	RESISTOR
	R201	QRSA08J-103YN	RESISTOR
	R202	QRD161J-155	RESISTOR
	R203	QRSA08J-102YN	RESISTOR
	R204	QRSA08J-273YN	RESISTOR
	R205	QRSA08J-331YN	RESISTOR
	R206	QRSA08J-103YN	RESISTOR
	R207	QRSA08J-222YN	RESISTOR
	R208	QRSA08J-102	RESISTOR
	R209	QRSA08J-101YN	RESISTOR
	C1	QCSA1HJ-220	CAPACITOR
	C2	QCSA1HJ-330	CAPACITOR
	C3	QCSA1HJ-180	CAPACITOR
	C4	QETC1AM-226	E CAPACITOR
	C5	QETC1HM-335	E CAPACITOR
	C6	QCSA1HJ-120	CAPACITOR
	C7	QCSA1HG-180	CAPACITOR
	C9	QCFA1HZ-103	CAPACITOR
	C10	QCFA1HZ-103	CAPACITOR
	C11	QCFA1HZ-103	CAPACITOR
	C12	QCSA1HJ-220	CAPACITOR
	C13	QCSA1HJ-270	CAPACITOR
	C14	QENC1AM-336	NP E CAPACITOR
	C15	QETC1CM-106	E CAPACITOR
	C16	QETC1HM-224	E CAPACITOR
	C17	QETC1EM-335	E CAPACITOR
	C18	QENC1EM-335	NP E CAPACITOR
	C19	QCC11EJ-823	CAPACITOR
	C20	QETC0JM-337	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C21	QETC1EM-475	E CAPACITOR
	C22	QEK61HM-334	E CAPACITOR
	C23	QCFA1HZ-103	CAPACITOR
	C24	QCFA1HZ-103	CAPACITOR
	C25	QETC1HM-334	E CAPACITOR
	C26	QEK61EM-475	E CAPACITOR
	C27	QCSA1HJ-330	CAPACITOR
	C28	QCYA1HK-102	CAPACITOR
	C29	QETC0JM-476	E CAPACITOR
	C30	QCYA1HK-102	CAPACITOR
	C31	QCYA1HK-102	CAPACITOR
	C32	QETC1AM-476	E CAPACITOR
	C33	QETC1HM-225	E CAPACITOR
	C34	QCFA1HZ-103	CAPACITOR
	C35	QETC0JM-476	E CAPACITOR
	C36	QETC1EM-475	E CAPACITOR
	C37	QETC1HM-104	E CAPACITOR
	C38	QCSA1HJ-470	CAPACITOR
	C39	QCFA1HZ-103	CAPACITOR
	C40	QETC1HM-334	E CAPACITOR
	C41	QETB1EM-475	E CAPACITOR
	C42	QCYA1HK-102	CAPACITOR
	C43	QETC0JM-476	E CAPACITOR
	C44	QCYA1HK-102	CAPACITOR
	C45	QCYA1HK-102	CAPACITOR
	C46	QETC1AM-476	E CAPACITOR
	C47	QCSA1HJ-151	CAPACITOR
	C48	QFN31HJ-563	M CAPACITOR
	C49	QCSB1HJ-220	CAPACITOR
	C201	QETC1HM-105	E CAPACITOR
	C202	QETC0JM-337	E CAPACITOR
	C203	QETC1EM-475	E CAPACITOR
	C204	QETC1HM-104	E CAPACITOR
	C207	QETC1HM-224	E CAPACITOR
	C208	QCSA1HJ-680	CAPACITOR
	C209	QETC0JM-337	E CAPACITOR
	C210	QETC1EM-335	E CAPACITOR
	C213	QETC1HM-474	E CAPACITOR
	L2	PU59152-121J	COIL
	L3	PU59152-680J	COIL
	L4	PU48530-820J	COIL
	L5	PU59152-680J	COIL
	L6	PU59152-680J	COIL
	L7	PU59153-101K	COIL
	L8	PU59152-680J	COIL
	L9	PU48530-101K	COIL
	L10	PU48530-5R6K	COIL
	L11	PU48530-101K	COIL
	L12	PU48530-5R6K	COIL
	L13	PU48530-101K	COIL
	L14	PU59152-100J	COIL
	L201	PU59153-101K	COIL
	EQ1	PU60381	EQUALIZER
	EQ2	PU60162	EQUALIZER
	OR	PU60162-2	EQUALIZER
	LPF1	PU60380	LOW PASS FILTER
	LPF2	PU60055	LOW PASS FILTER
	LPF3	PU60716	LOW PASS FILTER
	BPF201	PELN0313	BAND PASS FILTER
	CF201	PU58852	CERAMIC FILTER
	LC201	PU60057-3	TANK FILTER
	OR	PU60057-2	TANK FILTER
⚠	X201	PU60059	CRYSTAL RESONATOR
	SLD1	PU61241-1-1	SHIELD CASE
	SLD2	PU61242	SHIELD PLATE
	SLD3	PU61243	SHIELD COVER
	TP1	PU55774	TEST PIN, X2
	CN1	PEMC0712-112	PIN HEADER
	CN2	PEMC0712-115	PIN HEADER
	CN3	PEMC0712-112	PIN HEADER

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AUDIO CONTROL HEAD BOARD <12>

	PWB1	PB40046-01-02	A/CTL HEAD BOARD
	CN1	PU58844-104	CAP HOUSING
	CN2	PU58844-103	CAP HOUSING

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TIMER/DISPLAY/SW BOARD ASSEMBLY <21>

	PWBA	PB10680A-01	T/D/S BOARD ASSY
	IC1	UPD75P216ACW330	IC
	OR	UPD75216ACW-C95	IC
	IC2	IC-PST523H-2	IC
	IC101	GP1U541X	IR DETECT UNIT
	OR	GP1U521	IR DETECT UNIT
	OR	GP1U521X	IR DETECT UNIT
	Q1	2SC3311A(RS)	TRANSISTOR
	OR	2SC3199(G)	TRANSISTOR
	D1	RD9.1ES-T1B2	ZENER DIODE
	D2	11ES2	DIODE
	D3	11ES2	DIODE
	D4	1SS133	DIODE
	D5	1SS133	DIODE
	D101	SLH-34VC3F	LE DIODE
	D102	SLH-34VC3F	LE DIODE
	D103	SLH-34VC3F	LE DIODE
	D104	SLH-34VC3F	LE DIODE
	D105	SLH-34VC3F	LE DIODE
	D106	SLH-34MC3F	LE DIODE
	D107	SLH-34DC3F	LE DIODE
	D108	1SS132	DIODE
	D109	1SS132	DIODE
	D110	1SS132	DIODE
	D111	1SS132	DIODE
	D112	1SS132	DIODE
	D114	RD10ES-T1B2	ZENER DIODE
	OR	UZ10BSB	ZENER DIODE
	D115	1SS132	DIODE
	D126	1SS132	DIODE
	D127	1SS132	DIODE
	D128	1SS132	DIODE
	D129	1SS132	DIODE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D134	1SS132	DIODE
	R1	QRD161J-103	RESISTOR
	R2	QRD161J-682	RESISTOR
	R3	QRD161J-333	RESISTOR
	R4	QRD161J-333	RESISTOR
	R5	QRD161J-102	RESISTOR
	R6	QRD161J-103	RESISTOR
	R7	QRD161J-103	RESISTOR
	R8	QRD161J-103	RESISTOR
	R9	QRD161J-103	RESISTOR
	R10	QRD161J-271	RESISTOR
	R11	QRD161J-271	RESISTOR
	R12	QRD161J-333	RESISTOR
	R13	QRD161J-224	RESISTOR
	R14	QRD161J-472	RESISTOR
	R15	QRD161J-103	RESISTOR
	R16	QRD161J-103	RESISTOR
	R17	QRD161J-273	RESISTOR
	R18	QRD161J-472	RESISTOR
	R19	QRD161J-271	RESISTOR
	R101	QRD161J-271	RESISTOR
	R102	QRD161J-271	RESISTOR
	R103	QRD161J-271	RESISTOR
	R104	QRD161J-271	RESISTOR
	R105	QRD161J-271	RESISTOR
	R106	QRD161J-271	RESISTOR
	R107	QRD161J-271	RESISTOR
	R108	QRD161J-333	RESISTOR
	RA1	QRB047J-333	RESISTOR ARRAY
	OR	QRB049J-333	RESISTOR ARRAY
	C1	QER61CM-106	E CAPACITOR
	C2	QER61CM-106	E CAPACITOR
	C3	QCVB1CN-103	CAPACITOR
	C4	QEA40HZ-104	E CAPACITOR (DOUBLE)
	OR	PU60676-104	E CAPACITOR
	C5	QCVB1CN-103	CAPACITOR
	C6	QAT3120-200	TRIMMER CAPACITOR
	C7	QER61CM-106	E CAPACITOR
	C8	QCSB1HJ-120	CAPACITOR
	C9	QCBB1HJ-101	CAPACITOR
	C10	QCBB1HJ-101	CAPACITOR
	C11	QER61HM-106	E CAPACITOR
	C12	QER61CM-106	E CAPACITOR
	C13	QCF11HP-473	CAPACITOR
	C14	QCF31HP-473	CAPACITOR
⚠	X1	PU60226-4	CRYSTAL RESONATOR
	S2	PU60392-2-2	TACT SWITCH
	S3	PU60392-2-2	TACT SWITCH
	S4	PU60392-2-2	TACT SWITCH
	S5	PU60392-2-2	TACT SWITCH
	S6	PU60392-2-2	TACT SWITCH
	S7	PU60392-2-2	TACT SWITCH
	S8	PU60392-2-2	TACT SWITCH
	S18	PU60392-2-2	TACT SWITCH
	S19	PU60392-2-2	TACT SWITCH
	S21	PU60392-2-2	TACT SWITCH
	S22	PU60392-2-2	TACT SWITCH
	S23	PU60392-2-2	TACT SWITCH
	S24	PU60392-2-2	TACT SWITCH
	S25	PU60392-2-2	TACT SWITCH
	S26	PU60392-2-2	TACT SWITCH
	S30	PU60392-2-2	TACT SWITCH

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	S49	PU60392-2-2	TACT SWITCH
	S50	PU60392-2-2	TACT SWITCH
	S101	PU58486-1-1	SLIDE SWITCH
	S102	PU58487-1-1	SLIDE SWITCH
	S103	PU58487-1-1	SLIDE SWITCH
	FDP1	PEDP0010	FLUORESCENT DISPLAY PANEL
	HD1	PQ31355-1-2	FDP HOLDER(R)
	HD2	PQ31356-1-2	FDP HOLDER(L)
	HD3	PQM30038-1-2	LED HOLDER, X7
	TP1	PU56278	TEST POINT
	CN1	PU59555-8	CONNECTOR
	CN2	PU58844-9	CONNECTOR
	CN3	PU58844-4	CONNECTOR
	CN4	PU58844-3	CONNECTOR
	CN5	PU58844-102	CONNECTOR
⚠	CP1	ICP-F10	CIRCUIT PROTECTOR

OPE BOARD ASSEMBLY <22>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20600A-02	OPERATION BOARD ASSY
	Q1	2SC3311A(RS)	TRANSISTOR
	D1	SLH-34VC3F	LE DIODE
	D2	1SS132	DIODE
	D3	1SS132	DIODE
	D4	1SS133	DIODE
	D5	1SS133	DIODE
	R1	PU61127	V RESISTOR
	R2	QRD167J-271	RESISTOR
	R3	QRD167J-823	RESISTOR
	R4	QRD167J-104	RESISTOR
	R5	QRD167J-823	RESISTOR
	R6	QRD167J-101	RESISTOR
	R7	QRD167J-103	RESISTOR
	R8	QRD167J-472	RESISTOR
	C1	QER61CM-106	E CAPACITOR
	C2	QCF31HP-103	CAPACITOR
	S1	PU53598-2	TACT SWITCH
	S2	PU58486-1-1	SLIDE SWITCH
	S3	PU58486-1-1	SLIDE SWITCH
	CN1	PU59513-9	CONNECTOR
	CN2	PU59513-3	CONNECTOR
	CN3	PU59513-2	CONNECTOR

UPPER DRUM BOARD <41>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWB1	PDM3017	BOARD (UPPER DRUM)

PRE/REC AMP BOARD ASSEMBLY <43>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10434B	PRE/REC AMP BOARD ASSY
	IC1	AN3386NK-A	IC
	Q1	2SA1576(QRS)	TRANSISTOR
	Q2	2SC4081(QRS)	TRANSISTOR
	Q3	DTA124EU	TRANSISTOR
	Q4	2SC4081(QRS)	TRANSISTOR
	Q5	2SC4081(QRS)	TRANSISTOR
	Q6	2SC4081(QRS)	TRANSISTOR
	Q7	2SA1576(QRS)	TRANSISTOR
	Q8	DTC144WU	TRANSISTOR
	Q9	DTC144WU	TRANSISTOR
	Q10	DTC144WU	TRANSISTOR
	D1	1SS133	DIODE
		OR MA165	DIODE
	D2	MA141WK	DIODE
	D3	MA141WA	DIODE
	D4	1SS133	DIODE
		OR MA165	DIODE
	R1	QRSA08J-102YN	RESISTOR
	R2	QRSA08J-222YN	RESISTOR
	R3	QRSA08J-222YN	RESISTOR
	R4	QRSA08J-391YN	RESISTOR
	R5	QRSA08J-391YN	RESISTOR
	R6	QRSA08J-821YN	RESISTOR
	R7	QRSA08J-222YN	RESISTOR
	R8	QRSA08J-222YN	RESISTOR
	R9	QRSA08J-821YN	RESISTOR
	R10	QRSA08J-102YN	RESISTOR
	R11	QRSA08J-122YN	RESISTOR
	R12	QRSA08J-471YN	RESISTOR
	R13	QRSA08J-561YN	RESISTOR
	R14	QRSA08J-562YN	RESISTOR
	R15	QRSA08J-223YN	RESISTOR
	R16	QRSA08J-102YN	RESISTOR
	R17	QRSA08J-153YN	RESISTOR
	R18	QRSA08J-123YN	RESISTOR
	R19	QRSA08J-471YN	RESISTOR
	R20	QRSA08J-182YN	RESISTOR
	R21	QRSA08J-511YN	RESISTOR
	R22	QRSA08J-681YN	RESISTOR
	R23	QRSA08J-561YN	RESISTOR
	R24	QRSA08J-562YN	RESISTOR
	R25	QRSA08J-222YN	RESISTOR
	R26	QRSA08J-821YN	RESISTOR
	R27	QRSA08J-391YN	RESISTOR
	R28	QRSA08J-391YN	RESISTOR
	R29	QRSA08J-222YN	RESISTOR
	R30	QRSA08J-222YN	RESISTOR
	R31	QRSA08J-102YN	RESISTOR
	R32	QRSA08J-104YN	RESISTOR
	R33	QRSA08J-153YN	RESISTOR
	R34	QRSA08J-334YN	RESISTOR
	R36	QRSA08J-393YN	RESISTOR
	R37	QRSA08J-153YN	RESISTOR
	R38	QRSA08J-224YN	RESISTOR
	R39	QRD161J-433	RESISTOR
	R40	QRS188J-474YN	RESISTOR
	R41	QRSA08J-301YN	RESISTOR
	R42	QRSA08J-331YN	RESISTOR
	R43	QRSA08J-271YN	RESISTOR
	R44	QRSA08J-271YN	RESISTOR
	R45	QRSA08J-562YN	RESISTOR
	R46	QRS188J-562YN	RESISTOR
	R47	QRSA08J-103YN	RESISTOR
	C1	QCSA1HJ-681	CAPACITOR
	C2	QCSA1HJ-150	CAPACITOR
	C3	QCFA1HZ-103	CAPACITOR
	C4	QCSA1HJ-200	CAPACITOR
	C5	QCSA1HJ-100	CAPACITOR
	C6	QCFA1HZ-103	CAPACITOR
	C7	QCSA1HJ-680	CAPACITOR
	C8	QCSA1HJ-9R0	CAPACITOR
	C9	QCSA1HJ-240	CAPACITOR
	C10	QCSA1HJ-301	CAPACITOR
	C11	QCSA1HJ-181	CAPACITOR
	C12	QCFA1HZ-103	CAPACITOR
	C13	QCFA1HZ-103	CAPACITOR
	C14	QCFA1HZ-103	CAPACITOR
	C15	QCSA1HJ-331	CAPACITOR
	C16	QCSA1HJ-121	CAPACITOR
	C17	QCSA1HJ-470	CAPACITOR
	C18	QCFA1HZ-103	CAPACITOR
	C19	QCSA1HJ-330	CAPACITOR
	C20	QCSA1HJ-360	CAPACITOR
	C22	QCFA1HZ-103	CAPACITOR
	C23	QCSA1HJ-100	CAPACITOR
	C24	QCSA1HJ-471	CAPACITOR
	C25	QER60JM-476	E CAPACITOR
	C26	QCFA1HZ-103	CAPACITOR
	C27	QCSA1HJ-680	CAPACITOR
	C28	QCF81EZ-104	CAPACITOR
	C29	QCF81HZ-103	CAPACITOR
	C30	QCSA1HJ-391	CAPACITOR
	C31	QCFA1EZ-683	CAPACITOR
	C32	QER60JM-107	E CAPACITOR
	C34	QCFA1HZ-103	CAPACITOR
	C35	QCFA1EZ-104	CAPACITOR
	C36	QCY81EK-104	CAPACITOR
	C37	QCSA1HJ-101	CAPACITOR
	C38	QCSA1HJ-151	CAPACITOR
	C39	QCY81EK-104	CAPACITOR
	C40	QCFA1HZ-103	CAPACITOR
	C41	QCFA1HZ-103	CAPACITOR
	C42	QCY81EK-104	CAPACITOR
	C43	QCSA1HJ-101	CAPACITOR
	C44	QCSA1HJ-101	CAPACITOR
	C45	QCF81EZ-104	CAPACITOR
	C46	QER61AM-685	E CAPACITOR
	C47	QCF81EZ-224	CAPACITOR
	C48	QCFA1HZ-103	CAPACITOR
	C51	QCFA1HZ-103	CAPACITOR
	L1	PU48530-101K	COIL
	L2	PU59152-560J	COIL
	L3	PU59152-220J	COIL
	L4	PU59152-560J	COIL
	L5	PU59152-470J	COIL
	L6	PU59152-330J	COIL
	L7	PU59152-121J	COIL
	L8	PU59152-181J	COIL
	L9	PU59152-100J	COIL
	L10	PU59152-180J	COIL
	L11	PU59152-560J	COIL
	L12	PU59152-330J	COIL
	L13	PU59152-330J	COIL
	L14	PU48530-101K	COIL

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	SLD1	PQ32216-1-1	SHIELD CASE(1)
	CN1	PU58844-106	CAP HOUSING
	CN2	PU59555-107	CAP HOUSING
	CN3	PU59555-104	CAP HOUSING
	CN4	PU59974-8	CAP HOUSING

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SERVO BOARD ASSEMBLY <48>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20431B-01	SERVO BOARD ASSY
	IC401	HD49733ANT	IC
	IC501	BA7039	IC
		OR XRA7039	IC
	Q401	DTA124ES	TRANSISTOR
	D401	1SS133	DIODE
		OR MA165	DIODE
	D402	1SS133	DIODE
		OR MA165	DIODE
	D403	1SS133	DIODE
		OR MA165	DIODE
	D404	1SS133	DIODE
		OR MA165	DIODE
	D405	1SS133	DIODE
		OR MA165	DIODE
	D406	1SS133	DIODE
		OR MA165	DIODE
	D407	1SS133	DIODE
		OR MA165	DIODE
	D408	1SS133	DIODE
		OR MA165	DIODE
	D409	1SS133	DIODE
		OR MA165	DIODE
	D410	1SS133	DIODE
		OR MA165	DIODE
	R401	QRD161J-223	RESISTOR
	R402	QRD161J-225	RESISTOR
	R403	QRD161J-473	RESISTOR
	R404	QRD161J-222	RESISTOR
	R405	QRD161J-123	RESISTOR
	R406	QRD161J-472	RESISTOR
	R407	QRD161J-392	RESISTOR
	R408	QRD161J-105	RESISTOR
	R409	QRD161J-273	RESISTOR
	R410	QRD161J-105	RESISTOR
	R411	QRD161J-105	RESISTOR
	R412	QRD161J-273	RESISTOR
	R413	QRD161J-273	RESISTOR
	R414	QRD161J-335	RESISTOR
	R415	QRD161J-334	RESISTOR
	R416	QRD161J-822	RESISTOR
	R417	QRD161J-332	RESISTOR
	R418	QRD161J-102	RESISTOR
	R419	QRD161J-473	RESISTOR
	R420	QVZ3518-474	V RESISTOR,NTSC SW POINT
	R421	QVZ3518-684	V RESISTOR,PAL SW POINT
	R422	QRD161J-104	RESISTOR
	R426	QRD161J-821	RESISTOR
	R427	QRD161J-102	RESISTOR
	R428	QRD161J-105	RESISTOR
	R429	QRD161J-102	RESISTOR
	R430	QRD161J-102	RESISTOR
	R434	QRD161J-102	RESISTOR
	R435	QRD161J-102	RESISTOR
	R436	QRD161J-274	RESISTOR
	R437	QRD161J-274	RESISTOR
	R438	QRD161J-224	RESISTOR
	R439	QRD161J-103	RESISTOR
	R501	QRD161J-102	RESISTOR
	R502	QRD161J-332	RESISTOR
	R503	QRD161J-682	RESISTOR
	R508	QRD161J-124	RESISTOR
	C401	QCVB1CM-103	CAPACITOR
	C402	QEK61AM-226	E CAPACITOR
	C403	QFV11HJ-224	TF CAPACITOR
		OR QFV71HJ-224	TF CAPACITOR
	C404	QFV71HJ-223	TF CAPACITOR
		OR QFN31HJ-223	M CAPACITOR
	C405	QEK61EM-475	E CAPACITOR
	C406	QEK61EM-475	E CAPACITOR
	C407	QEK61CM-106	E CAPACITOR
	C408	QEK61CM-106	E CAPACITOR
	C409	QCC31CK-223	CAPACITOR
	C410	QFV71HJ-184	TF CAPACITOR
		OR QFV11HJ-184	MMT CAPACITOR
	C411	QCBB1HJ-471	CAPACITOR
	C412	QFL31HJ-682	M CAPACITOR
	C414	QCBB1HJ-102	CAPACITOR
	C415	QEK61AM-226	E CAPACITOR
	C416	QEK61AM-226	E CAPACITOR
	C417	QCBB1HJ-271	CAPACITOR
	C418	QCBB1HJ-561	CAPACITOR
	C419	QCB81HJ-102	CAPACITOR
	C420	QEK61HM-105	E CAPACITOR
	C421	QCBB1HJ-102	CAPACITOR
	C422	QFV71HJ-563	TF CAPACITOR
		OR QFV11HJ-563	MMT CAPACITOR
	C423	QCBB1HJ-102	CAPACITOR
	C427	QCBB1HJ-181	CAPACITOR
	C502	QCVB1CM-103	CAPACITOR
	C504	QFV71HJ-104	TF CAPACITOR
		OR QFV11HJ-104	MM CAPACITOR
	C505	QCVB1CM-103	CAPACITOR
	C506	QFV71HJ-683	TF CAPACITOR
		OR QFV11HJ-683	MMT CAPACITOR
	C507	QCVB1CM-103	CAPACITOR
	C508	QEK61AM-226	E CAPACITOR
	C509	QCVB1CM-103	CAPACITOR
	L501	PU59152-270J	COIL
	HN1	PU58018-1-2	PWB HINGE
	TP401	PU57545	TEST PIN, X6
	CN401	PU58844-2	CAP HOUSING
	CN402	PU58844-8	CAP HOUSING
	CN403	PU59934-8	WIRE HOLDER
	CN404	PU59555-4	CAP HOUSING
	CN405	PU58844-3	CAP HOUSING
	CN406	PU59934-12	WIRE HOLDER
⚠	CP401	ICP-F15	CIRCUIT PROTECTOR

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DECK TERMINAL BOARD ASSEMBLY <51>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10141C-02	DECK TERMINAL BOARD ASSY
	Q1	PU60625	END SENSOR
	R1	QRD161J-102	RESISTOR
	R2	QRD161J-123	RESISTOR
	R3	QRD161J-331	RESISTOR
	R4	QRD161J-331	RESISTOR
	C1	QCVB1CM-103	CAPACITOR
	C2	QCFB1EZ-223	CAPACITOR
	PHS1	PU60623	REEL SENSOR, (PS1)
		OR PS5705HR	PH INTERRUPTER
	CN1	PEMC0722-014	WIRE TRAP
		OR PEMC0753-014	WIRE TRAP
	CN2	PU60642	CONNECTOR
	CN3	PU60640	CONNECTOR

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LOADING MDA BOARD ASSEMBLY <55>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA2	PB10141C2-02	LOADING MDA BOARD ASSY
⚠	IC1	BA6418N	IC
⚠		OR XRA6418N	IC
	C1	QETC1CM-476	E CAPACITOR
	C3	QFN31HJ-223	M CAPACITOR
	CN1	PU59555-104	CAP HOUSING
	CN2	PU58844-102	CAP HOUSING

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CASSETTE HOUSING BOARD <56>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWB1	PB40041-01-01	CASSETTE HOUSING BOARD ASSY
	Q2	PN268VI-NC	PHOTO TRANSISTOR
	C1	QCC11EJ-103	CAPACITOR
	PHS3	PU60629	CASS.SENSOR,(PS3)
	CN2	PU60639	4 PIN SOCKET

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COLOR PROCESS BOARD ASSEMBLY <97>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10658A-02	COLOR PROCESS BOARD ASSY
	IC1	AN3592K	IC
	IC2	LM393P	V COMPARATOR
	IC3	NJM2233BD	IC
	IC4	UPD4013BC	IC
	IC101	MSM16811RS	IC
	Q1	2SA933S(RS)	TRANSISTOR
		OR 2SA1267(YG)-TJK	TRANSISTOR
	Q2	2SA933S(RS)	TRANSISTOR
		OR 2SA1267(YG)-TJK	TRANSISTOR
	Q3	2SC1740S(RS)	TRANSISTOR
		OR 2SC3199-TJK	TRANSISTOR
	Q4	2SC1740S(RS)	TRANSISTOR
		OR 2SC3199-TJK	TRANSISTOR
	Q5	2SC1740S(RS)	TRANSISTOR
		OR 2SC3199-TJK	TRANSISTOR
	Q6	2SC1740S(RS)	TRANSISTOR
		OR 2SC3199-TJK	TRANSISTOR
	D1	1SS133	DIODE
		OR MA165	DIODE
	D2	1SS133	DIODE
		OR MA165	DIODE
	D3	1SS133	DIODE
		OR MA165	DIODE
	R1	QRD161J-821	RESISTOR
	R2	QRD161J-391	RESISTOR
	R3	QRD161J-332	RESISTOR
	R4	QRD161J-561	RESISTOR
	R5	QRD161J-561	RESISTOR
	R6	QRD161J-152	RESISTOR
	R7	QRD161J-331	RESISTOR
	R8	QRD161J-272	RESISTOR
	R9	QRD161J-152	RESISTOR
	R10	QRD161J-152	RESISTOR
	R11	QRD161J-154	RESISTOR
	R12	QRD161J-104	RESISTOR
	R13	QRD161J-221	RESISTOR
	R14	QRD161J-683	RESISTOR
	R16	QRD161J-123	RESISTOR
	R17	QRD161J-391	RESISTOR
	R18	QRD161J-332	RESISTOR
	R19	QRD161J-103	RESISTOR
	R20	QRD161J-103	RESISTOR
	R21	QRD161J-185	RESISTOR
	R22	QRD161J-473	RESISTOR
	R23	QRD161J-333	RESISTOR
	R24	QRD161J-105	RESISTOR
	R25	QRD161J-103	RESISTOR
	R26	QRD161J-823	RESISTOR
	R27	QRD161J-561	RESISTOR
	R28	QRD161J-471	RESISTOR
	R29	QRD161J-681	RESISTOR
	R30	QRD161J-473	RESISTOR
	R31	QRD161J-473	RESISTOR
	R32	QRD161J-562	RESISTOR
	R33	QRD161J-103	RESISTOR
	R35	QRD161J-562	RESISTOR
	R36	QRD161J-333	RESISTOR
	R37	QRD161J-183	RESISTOR
	R38	QRD161J-475	RESISTOR
	R39	QRD161J-121	RESISTOR
	R40	QRD161J-122	RESISTOR
	R41	QRD161J-392	RESISTOR
	R42	QRD161J-272	RESISTOR
	R101	QRD161J-472	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C1	QCSB1HJ-220	CAPACITOR
	C2	QCSB1HJ-220	CAPACITOR
	C3	QCBB1HJ-151	CAPACITOR
	C4	QCVB1CN-103	CAPACITOR
	C5	QCVB1CN-103	CAPACITOR
	C6	QCVB1CN-103	CAPACITOR
	C7	QCVB1CN-103	CAPACITOR
	C8	QCVB1CN-103	CAPACITOR
	C9	QETC0JM-107	E CAPACITOR
	C10	QCVB1CN-103	CAPACITOR
	C11	QETC1HM-105	E CAPACITOR
	C12	QFN31HJ-333	M CAPACITOR
	C13	QFN31HJ-273	M CAPACITOR
	C14	QETC1EM-475	E CAPACITOR
	C15	QFN31HJ-472	M CAPACITOR
	C16	QETC1HM-105	E CAPACITOR
	C17	QCC31CJ-332	CAPACITOR
	C18	QETC1HM-105	E CAPACITOR
	C19	QCC31CJ-152	CAPACITOR
	C20	QCBB1HJ-102	CAPACITOR
	C21	QCVB1CN-103	CAPACITOR
	C22	QCT25CH-820	CAPACITOR
	C23	QCT25CH-820	CAPACITOR
	C24	QCVB1CN-103	CAPACITOR
	C25	QCVB1CN-103	CAPACITOR
	C26	QCVB1CN-103	CAPACITOR
	C29	QCVB1CN-103	CAPACITOR
	C101	QCF31HP-473	CAPACITOR
	L1	PU59152-330J	COIL
	L2	PU59152-100J	COIL
	L3	PU48530-101K	COIL
	LC1	PU57139-2	LC BLOCK
	CN1	PU58844-9	CONNECTOR
	CN2	PU58844-2	CONNECTOR
	CN3	PU58844-6	CONNECTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION

SECTION 6
TECHNICAL INFORMATIONS

6.1 CIRCUIT CONTROL SYSTEM

1. IC601 pin function (Mechacon)

Pin No.	Symbol		I/O format	Label	I/O	Contents
1	Port 6	3	C-MOS	LCM 1	O	LOADING MOTOR DRIVER
2		2		LCM 2		
3		1		DRUM DRIVE	O	SPECIAL PB H CORRECTION
4		0		CAP CTL DRIVE		CAPSTAN MOTOR DRIVE VOLTAGE SERVO
5	Port 4	7	N-ch OPEN DRAIN	AVG FM	I	AUTO TRACKING DATA
6		6		S CURVE		TUNING CHECK DATA IN
7		5		THERM		TEMPERATURE COMPENSATION (CAPSTAN BRAKE TIMING CONTROL)
8		4		REC SAFE		REC SAFETY SW ON; L
9	Port 3	7		MODE SENS B	I	MECHANISM MODE DETECTION
10		6		TIMER CLOCK	I	TM (TIMER/MECHACON) BUS CLOCK
11		5		TIMER DATA	I/O	16 bit SERIAL DATA
12		4		MODE SENS A	I	MECHANISM MODE DETECTION
13		3		V SYNC	I	INPUT SIGNAL DETECT (50/60 Hz)
14		2		SERVO	O	CAPSTAN MOTOR SERVO MODE
15		1		CAP FG	I	MODE DETECT, BACK SPACE COUNT
16		0		CTL PULSE	I	MODE DETECT
17	Port 5	7	C-MOS	BT	O	TUNING DATA OUTPUT (PWM DATA)
18		6		PAUSE	O	CAPSTAN MOTOR SERVO
19		5		A/M/S		HEAD SELECT (Auto/Manual/Slow)
20		4		V PULSE		V PULSE OUTPUT
21	P5 3/T/ED3		—	DRUM FF	I	DRUM FF (REC TIMING CONTROL)
22	CN Vss		—	Vss	I	GND
23	RESET			RESET		RESET AT CONNECT VCR TO AC
24	X IN			X IN	I	SYSTEM CLOCK (8 MHz)
25	X OUT			X OUT	O	
26	Vee			Vss	—	GND
27	Port 5	2	—	TU FG	I	TAKE UP REEL ROTATION DETECT
28		1		V SYNC	I	SIGNAL DETECT
29		0		START SENS	I	START SENSOR (LEADER TAPE DETECT, SENS ON;L)
30	Port 1	5	N-ch OPEN DRAIN	CASS SENS	I	CASSETTE SENSOR (CASSETTE IN/OUT DETECT)
31		4		END SENS	I	END SENSOR, TRAILER TAPE DETECT, SENS ON: L
32		3		CAP REV	O	CAP REV MODE: L
33		2		POWER ON/OFF	O	POWER CONTROL, P ON: L
34		1		SYNC DET	I	SYNC DETECT
35		0		P MUTE 2	O	PICTURE MUTE ON: H
36	Port 0	7		A MUTE	O	AUDIO MUTE ON: H
37		6		P. MUTE	O	PICTURE MUTE ON; L
38		5		REC START	O	REC START: L
39		4		REMOTE PAUSE	I	REMOTE PAUSE ON: L
40		3		SECAM	I	SECAM MODE: H
41		2		MESECAM	I	MESECAM MODE: H
42		1		NTSC 3.58	I	NTSC 3.58 MODE: H
43		0		LP SPCL	O	LP SPECIAL PLAYBACK MODE: L
44	Port 2	7	C-MOS	S/M/EX CLOCK	O	CLOCK
45		6		INDEX	I/O	INDEX (VISS) DATA WRITE/DETECT (ON: L)
46		5		SRL DATA	O	16 Bit SERIAL DATA for SERVO IC CONTROL
47		4		EXPV DATA	O	12 Bit SERIAL DATA (SERIAL/PARALLEL DATA)
48		3		NC	—	NC
49		2		EXPT DATA	O	12 Bit SERIAL DATA (SERIAL/PARALLEL DATA)
50		1		MEMORY CE	O	MEMORY IC CHIP ENABLE
51		0		MEMORY DATA	O	MEMORY IC DATA (WRITE/READ CONTROL)
52	Vcc			Vcc	I	for the SYSTEM CONTROL (DC 5.8 V)

2. IC 1 pin function (Timer)

Pin No.	Symbol	Label	I/O	Contents
1	S3	S d	O	SEGMENT DISPLAY DATA OUTPUT
2	S2	S c		
3	S1	S b		/KEY SCAN PULSE OUTPUT
4	S0	S a		/KEY SCAN PULSE OUTPUT
5	P00/INT4	POWER DOWN	I	POWER DOWN DETECT
6	P01/SCK	NC	–	NC
7	P02/SD	NC		
8	P03/SI	TEST	I	TEST POINT
9	P10/INT0	REMOTE	I	REMOCON DATA (16 bit SERIAL DATA)
10	P11/INT1	NC	–	NC
11	P12/INT2	NC		
12	P13/T10	CNT CLOCK	I	COUNTER DATA (Linear Time Counter)
13	P20	KS 0	I	KEY SCAN DATA INPUT
14	P21	KS 1		
15	P22	KS 2		
16	P23/BUZ	KS 3		
17	P30	TIMER DATA	I/O	TM (TIMER-MECHACON) bus (16 bit SERIAL DATA/CLOCK)
18	P31	TIMER CLK	O	
19	P32	NC	–	NC
20	P33	NC		
21	P60	NC		
22	P61	NC		
23	P62	NC		
24	P63	NC		
25	P40	POWER	O	LED CTL (LED ON: L)
26	P41	PAUSE		
27	P42	AUTO TRACK		
28	P43	PAL		
29	PPO	NC	–	NC
30	X1	X1	I	MAIN SYSTEM CLOCK (4.19 MHz)
31	X2	X2	O	
32	Vss	Vss	I	GND
33	XT1	XT1		
34	XT2	XT2	–	NC
35	P50	MESECAM	O	LED CTL (LED ON: L)
36	P51	SECAM		
37	P52	NTSC 3.58		
38	P53	NTSC 4.43		
39	RESET	RESET	I	RESET AT CONNECT VCR TO AC
40	T0	4G	O	COLUMN DISPLAY DATA
41	T1	5G		
42	T2	6G		
43	T3	7G		
44	T4	1G		
45	T5	2G		
46	T6	3G		
47	T7	8G		
48	T8	9G		
49	T9	10G		
50	T10/S15/PH3	S p	O	SEGMENT DISPLAY DATA
51	T11/S14/PH2	S o		/KEY SCAN PULSE OUTPUT
52	T12/S13/PH1	S n		/KEY SCAN PULSE OUTPUT
53	T13/S12/PH0	S m		/KEY SCAN PULSE OUTPUT
54	T14/S11	S l		
55	T15/S10	S k		
56	VLOAD	V LOAD	I	For the FIP DRIVER (−29.3V)
57	VPRE	V PRE		(−4.4V)
58	S9	S j	O	SEGMENT DISPLAY DATA
59	S8	S i		
60	S7	S h		/KEY SCAN PULSE OUTPUT
61	S6	S g		/KEY SCAN PULSE OUTPUT
62	S5	S f		/KEY SCAN PULSE OUTPUT
63	S4	S e		/KEY SCAN PULSE OUTPUT
64	VDD	VDD	I	for the SYSTEM CONTROL